The RUBBER AGE

March, 1945

TECHNOLOGY DEPT.

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ETHYL ACCELERATORS
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ETHYL TUADS
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R. T. VANDERBILT CO., INC.
230 Park Avenue, New York 17, N. Y.

HOW MUCH DO YOU KNOW about synthetic rubber scrap?

Tell us what you think is the best method of processing or using this scrap.

You may win up to $500.00

Facts About This Big Contest

A group of rubber technologists identified with the rubber industry, known as the Chicago Rubber Group, is offering three prizes, totaling $1000.00 for the best papers on the utilization (reclaiming and processing) of cured synthetic rubber scrap. While the papers may deal with any phase of the problem, here are some subjects which suggest themselves: 1. Separation and segregation of synthetic scrap rubber. 2. Methods of identification of synthetic scrap rubber. 3. Reclaiming of synthetic scrap rubber. 4. Compounding studies which will result in greater use of reclaimed synthetic scrap, or of ground synthetic scrap rubber.
First prize: $500.00; second prize: $300.00; third prize: $200.00. If you feel that you have ideas of value for this contest, be sure to enter! You may win one of these substantial cash prizes.

READ THESE SIMPLE CONTEST RULES:

This contest is open to anyone in the United States or Canada excepting officers and directors of the Chicago Rubber Group for 1943-45. Selection of subject matter is left to the discretion of the contestant. As many papers as desired may be submitted by any one contestant. Papers should be based upon information which has not previously been presented before any technical society meeting or published in any trade magazine. Contest closes at midnight on August 1, 1945. Awards will be made during the fall meeting of the American Chemical Society in Chicago, 1945. The decision of the judges will be final. Each author must submit three copies of his paper to Mr. A. R. Floreen, Vice-President, City National Bank & Trust Company, 208 S. La Salle St., Chicago. These three copies will be judged separately by the Rubber Manufacturers Association, the Rubber Reclaimers Association and the Rubber Division of the American Chemical Society. The judges will report their findings to Bruce W. Hubbard, Chairman, Chicago Rubber Group, 2512 W. 24th Street, Chicago, to whom all inquiries for additional information should be addressed.

Sponsored by CHICAGO RUBBER GROUP, Chicago

SPACE DONATED BY

DU PONT

REG. U.S. PAT. OFF.

RUBBER CHEMICALS DIVISION

BETTER THINGS FOR BETTER LIVING . . . *Through Chemistry*

THE RUBBER AGE, published monthly by The Palmerton Publishing Co., Inc., Printing Office, East Stroudsburg, Pa. Editorial and Advertising Offices at 250 West 57th Street, New York 19, N. Y. Entered as second class matter October 20, 1933, at the Post Office at East Stroudsburg, Pa., under the Act of March 3, 1879. Subscription in United States, $3.00 a year; Canada, $3.50; Foreign, $4.00. March, 1945, Vol. 56, No. 6.

Hycar has done all this in the past— It can do still more for you in the future

SHOWN here are just a few of the finished products that can be made better from Hycar synthetic rubbers. Some were routine jobs for Hycar and for the processor. Others represent hours and days of research in Hycar's Technical Service Laboratory. Each was designed to possess a certain *combination* of properties needed to do a specific job.

Hycar offers many important advantages—among them the ability to produce *a better finished article at a lower cost* despite a slightly higher initial price than some other synthetics. When true competitive markets are restored after the war, Hycar advantages will be even more important.

Hycar advantages — particularly over other oil-resistant synthetic rubbers—are shown in the following list. Consider these properties in connection with your product of the future. You will find that Hycar can fit effectively and profitably into your plans.

- *Better storage stability*
- *Dependable uniformity of crude material*
- *Lower specific gravity*
- *Better oil and gas resistance*
- *Can be blended with GR-S*
- *Will take higher pigment loadings*
- *Better extrusion characteristics*
- *A variety of combinations of properties not otherwise obtainable*
- *Excellent performance in severest types of service has been proved throughout all industry.*

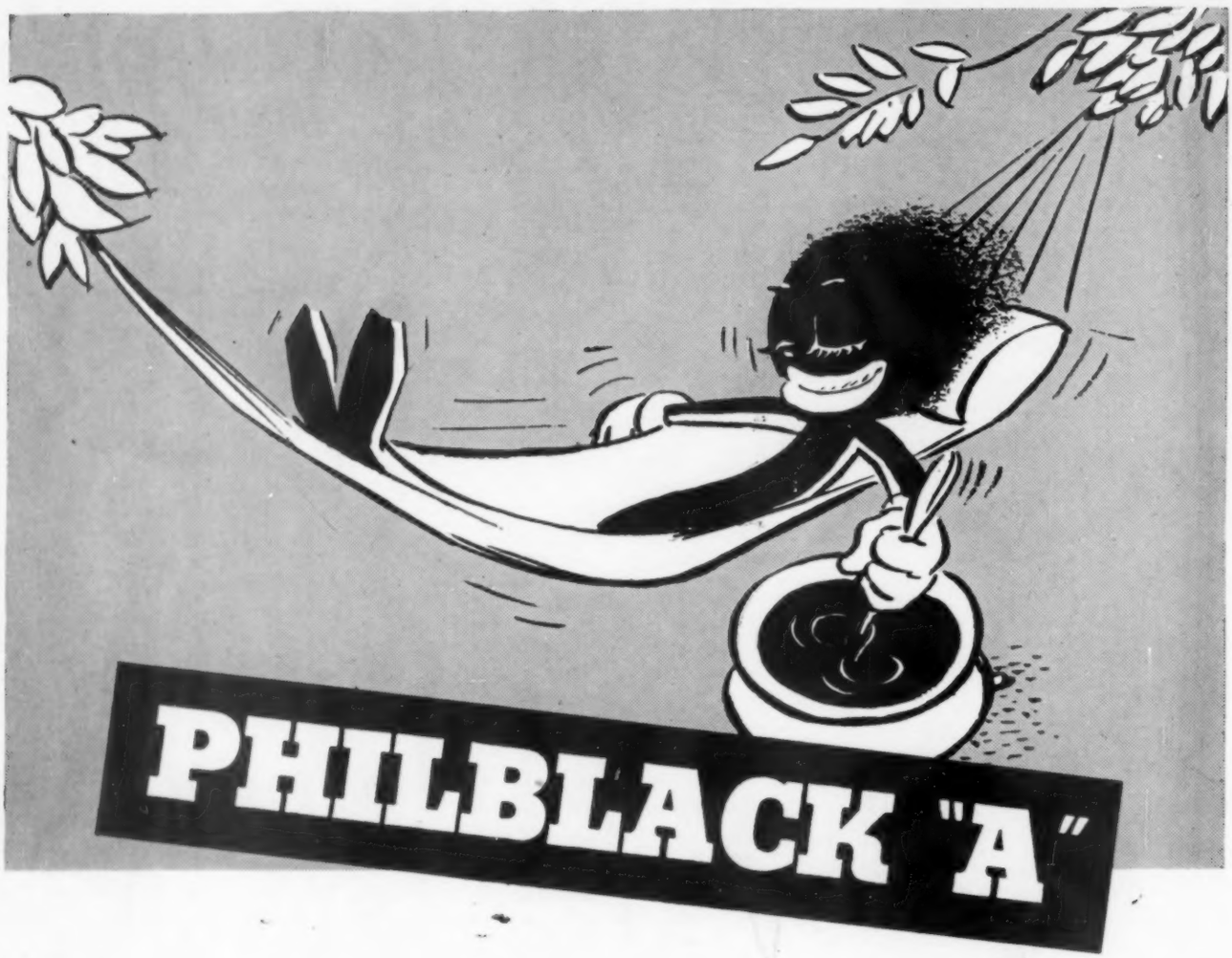
Hycar's Technical Service Staff is at your service, ready to help you with your individual problems. *Hycar Chemical Company, Akron 8, Ohio.*

Hycar

Reg. U. S. Pat. Off.

LARGEST PRIVATE PRODUCER OF BUTADIENE TYPE

Synthetic Rubbers



is EXCELLENT *for* PROCESSING

because it removes *nerve* from all synthetic rubbers with a minimum mixing cycle and permits—

Fast—smooth extrusions with low shrinkage and high green strength

Smooth calendering that holds gauge and impressions

Excellent mold flow

Only with this unique and different HMF black are these processing features obtained to the full degree.

PHILLIPS PETROLEUM COMPANY, PHILBLACK DIVISION

FIRST CENTRAL TOWER, AKRON, OHIO

HAVE YOU ENTERED THE CHICAGO RUBBER GROUP CONTEST?

Because—with Geon it's the *combination* of properties that counts

IT'S BETTER than even money that GEON-coated fabric or paper—or flexible unsupported sheet—will be broadly used for book-binding when the GEONS are released for non-military applications. That's because a product made from GEON can be *planned* to include the properties needed.

For example, the ideal book binding must wear well—particularly in public library service. Covers made from GEON will wear indefinitely, because of their excellent resistance to abrasion and their long flex life. They won't be appreciably affected by age, either . . . Books get dirty. Covers made from GEON will be waterproof, easily washed . . . Color is an important factor in the sale of books. GEON materials may be brilliantly—or delicately—colored . . . Many valuable book covers have been destroyed by mildew. GEON will be unaffected by mildew—discoloration will wash right off.

These and other properties of GEON—resistance to chemicals, foods, heat, cold, light and many other destructive elements, may be had in an almost limitless variety of *planned* combinations. GEON may be made into a wide variety of forms, too—coatings for fabric and paper; flexible sheet or film for packaging materials; brief cases, upholstery; flexible or rigid extrusions and molded goods for innumerable applications. Probably you can suggest additional applications for these truly versatile raw materials.

For more complete information about GEON polyvinyl materials, write Department KK-3, Chemical Division, The B. F. Goodrich Company, 324 Rose Building, Cleveland 15, Ohio.

Geon
Polyvinyl Materials

CHEMICAL DIVISION
The B. F. Goodrich Company
324 ROSE BUILDING • CLEVELAND 15, OHIO

1942-1943. By government order, reclaimed rubber used widely for camel back, soles, heels, passenger tires and many other products—because there just wasn't enough natural rubber to go around.

1944. Reclaimed rubber on an added assignment. Used *with* GR-S to help stretch the supply—because in the first few months there wasn't enough GR-S to go around.

1945. Reclaimed rubber assigned another new use by government order to help stretch supply of carbon black —because there isn't enough carbon black to go around.

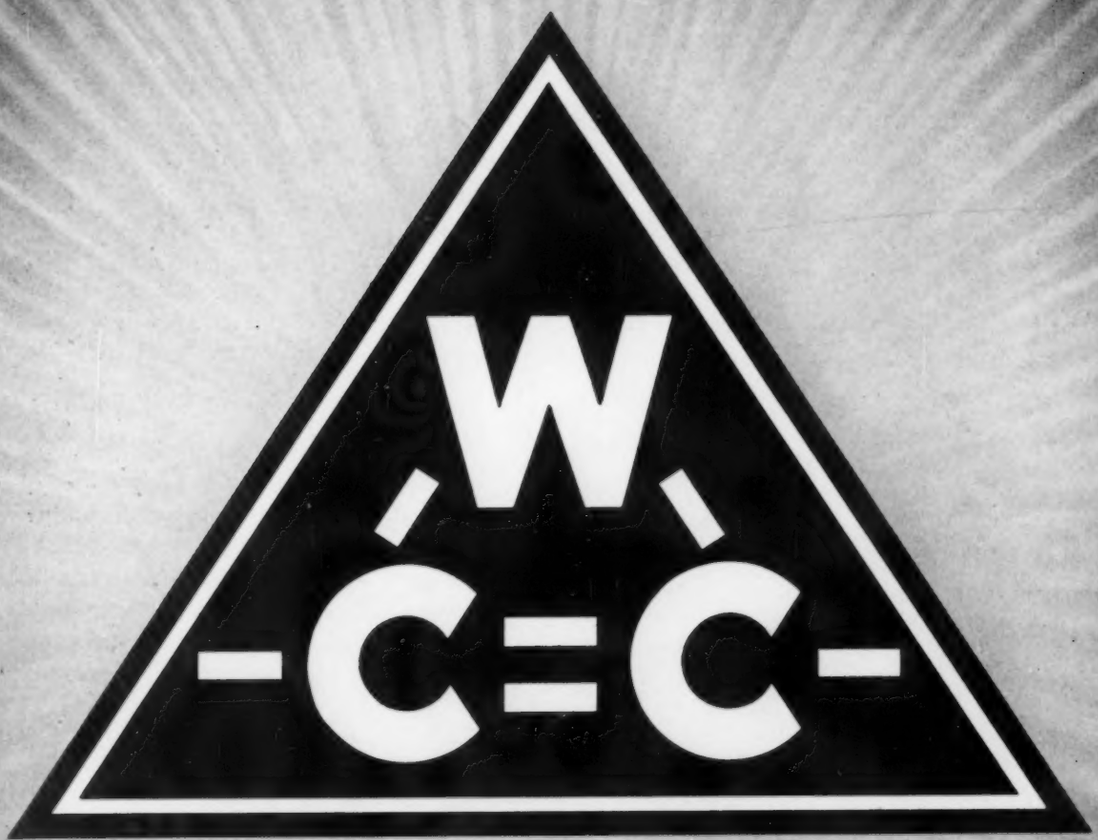
There is no other rubber-like material so versatile—so ready to fill the gap, so *able* to help when other sources fail. And there's no other company better qualified than Philadelphia Rubber to make sure that reclaimed rubber *can* fill the gap; *will* be able to help.

For example, Philadelphia Rubber's accelerated research with GR-S established new and important facts that meant better compounds at lower cost; important now, and important in the future when competitive markets return. There is no organization in this country better equipped to help you with problems involving the use of reclaim. We really want you to make use of our laboratory staff and facilities in solving any reclaimed rubber problems you may have now or in the future. The Philadelphia Rubber Works Company, 324 Rose Building, Cleveland 15, Ohio.

PHILADELPHIA
RECLAIMED RUBBER

THE TRADE-MARK OF

WILCHEM PRODUCTS



REG. U. S. PAT. OFFICE

MATERIALS OF MERIT FOR THE HIGH POLYMER FIELD. THE LATEST . . .

SYNVAR RESINS

All types of urea and phenol formaldehyde resins

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10 EAST 40TH STREET • NEW YORK 16, N. Y.

AQUEOUS DISPERSIONS...

to meet

your problems!

Over his shoulder, you see some of the *usual* applications of Flintkote SYNTEX Rubber Products.

If your requirements are not on this list... and you need something *unusual* to improve your processes and products, perhaps Flintkote can help you find the answer.

So... if it's a question of bonding, impregnating, coating, or something special... let us explore your problem thoughtfully together.

Flintkote technicians will welcome the opportunity to work right along with your staff, from laboratory to finished commodity. Our long experience in formulating and compounding water dispersions for many varied requirements has given us a fund of valuable data that should be of great advantage in solving your difficulties.

Many of the new possibilities in synthetic dispersions, and other fluid rubber and resin products... due to continuous development of their properties... have their origin in Flintkote research.

How this research can help your business should be investigated carefully. All our facilities... research, engineering, development and manufacture... are at your service. Ask us to send a representative. There's no obligation.

FLINTKOTE
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SYNTEX PRODUCTS

THE FLINTKOTE COMPANY *Industrial Products Division* • 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

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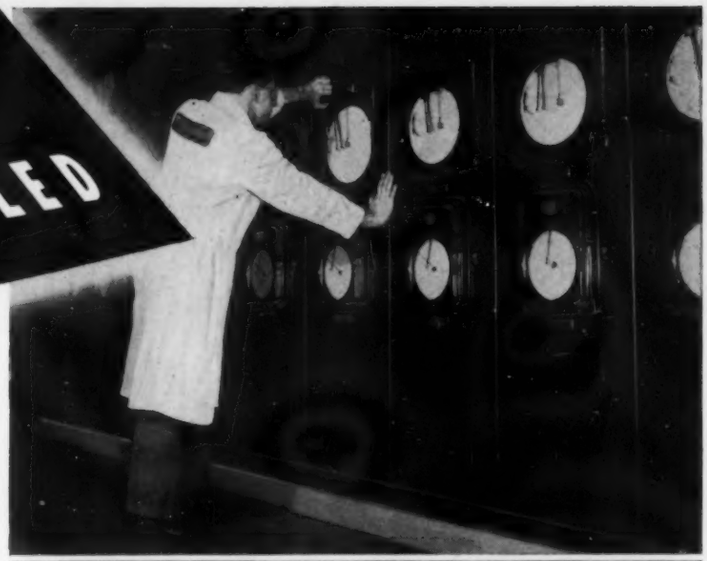
QUALITY IS CONTROLLED

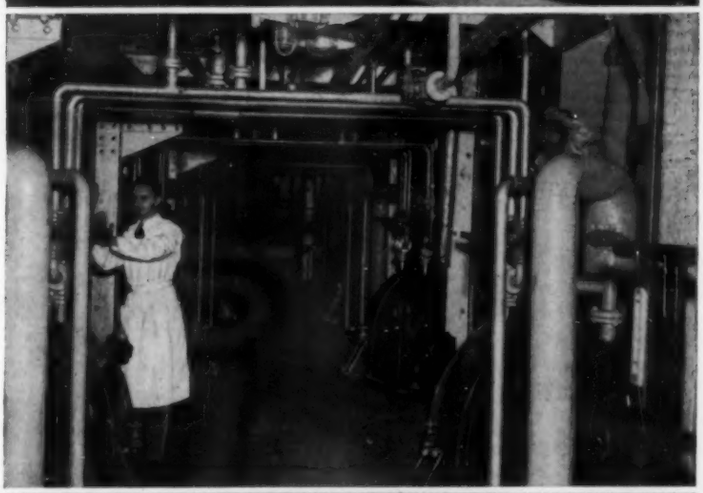


That's Why

BUTAPRENE N

Gives You

UNIFORM WORKABILITY



WHEN the "spec" calls for Butaprene N you can be sure of this one *important* thing—*uniformity*. Milling, calendering, extruding, curing—Butaprene N works the same with *every* batch; no lost time through fouled-up production, no reworks, no rejects.

For Butaprene quality is *controlled* from raw material to sheeted gum. Basic hydrocarbons, emulsifiers, coagulants, modifiers and other chemicals are scrupulously checked before processing; every step in the manufacture rigorously controlled. Physical properties are *always* uniform; quality ALWAYS the same.

Butaprene products have performed in temperatures ranging from plus 300° to minus 70° Fahrenheit. Why not see what this versatile Firestone elastomer will do for you? Complete new chart showing various physical properties of Butaprene N is available on request. Simply write XYLOS RUBBER COMPANY, Akron 1, Ohio.

BUTAPRENE N

by **Firestone**

THE SYNTHETIC RUBBER OF A THOUSAND POSTWAR USES

RESISTS: Oil - - Gasoline - - Heat - - Sub-Zero Cold - - Aging - - Abrasion

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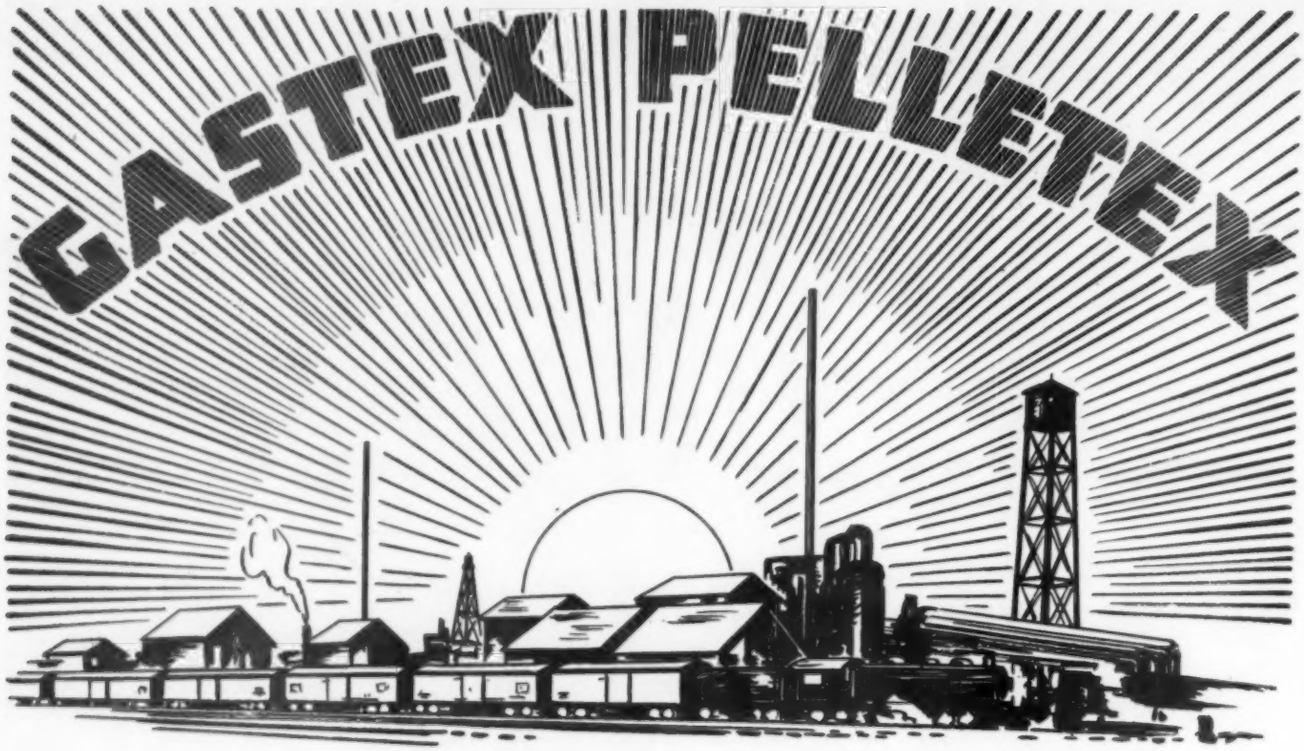

Bringing Up Reinforcements

With the April completion of additional production units at our Pampa plant, we are happy to announce an increased production of 20,000,000 pounds of PELLETEX annually. This new capacity will help relieve present pressure on our facilities for critical government allocations, and enable us to better serve our customers, both old and new, when the new day dawns after Victory.

PELLETEX

Semi-Reinforcing Furnace

BLACK

HERRON BROS. & MEYER

OHIO BLDG., AKRON, OHIO.

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GENERAL ATLAS CARBON

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GASTEX TRADE MARK

PELLETEX TRADE MARK

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IT'S HEAT-SOFTENING!

CHEMIGUM N-1

cuts milling time 20% to 25%
speeds up your production

IN these days of labor and production bottlenecks you can step up your output of rubber products by using **CHEMIGUM N-1** — Goodyear's superior oil-resisting synthetic rubber — *because it is heat-softening.* For this reason it breaks down in from three to five minutes at processing temperatures.

As a result, batch time is greatly shortened. Less plasticizer is required and in some cases can be entirely eliminated. And because it is heat-softening, **CHEMIGUM N-1** makes smoother, thinner calender sheets, better coating stocks. In molded and extruded goods it holds form and shape better.

CHEMIGUM N-1 can be compounded to give a Type A Durometer hardness from 30 through 90 up to hard rubber. It has high tensile strength and little thermal expansion.

Ample Supply Available

Another big advantage is that **CHEMIGUM N-1** can be used with your present equipment; no new machines or tools are required. Goodyear's large production now assures manufacturers of adequate supplies of uniform quality, carefully controlled to meet your plasticity requirements. Write today for complete information. Goodyear, Plastics and Chemicals Division, Akron 16, Ohio.

Chemigum (pronounced Kem-e-gum)—T.M. The Goodyear Tire & Rubber Company

For products requiring *extreme* cold-resistance, ask for information on

CHEMIGUM N-2

A PRODUCT OF GOODYEAR RESEARCH

GOODYEAR

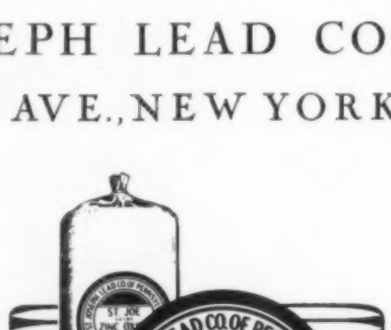
THE GREATEST NAME IN RUBBER

Above All Else

One principle governs the production of St. Joe lead-free Zinc Oxides; it has always done so; it is, above all else, to make as nearly perfect a product as is humanly possible. The maintenance of that principle places responsibilities upon all in this organization—it inspires every operation of hand and machine. This insistence upon perfection is not the easiest way; it is, rather, the natural result of a policy established by the management of this company before the first ton of Zinc Oxide was produced. This policy has made the St. Joseph Lead Company's products famous for their consistent high quality among consumers of lead-free zinc oxides.

ST. JOSEPH LEAD COMPANY

250 PARK AVE., NEW YORK, 17, N. Y.



MADE BY THE LARGEST PRODUCER OF LEAD IN THE UNITED STATES

DELIVERS GREATER
"STRENGTH AND LOAD"...*
Continex SRF
SEMI-REINFORCING
FURNACE BLACK
*Greater strength and loading capacity.
Continex SRF is a specially developed semi-reinforcing furnace type black of greater strength and loading capacity. It improves and facilitates processing and imparts definite advantages to the finished rubber products in which it is used. Carefully "engineered" as to properties and characteristics and rigidly controlled in production, it delivers greater strength and loading capacity and assures higher rebound resilience and longer service life. More complete information is contained in our Continex SRF Technical Bulletin, which is yours for the asking. May we mail you a copy?
CONTINENTAL CARBON COMPANY
MANUFACTURER
[CONTINENTAL CHANNEL AND FURNACE BLACKS]
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WITCO CHEMICAL COMPANY
DISTRIBUTOR
[FORMERLY WISHNICK-TUMPEER, INC.]
MANUFACTURERS AND EXPORTERS
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SYNTHETIC RUBBER & RESIN COMPOUNDS

Custombuilt

FOR THE ARMED FORCES

A Partial List of War Products fabricated from GENERAL LATEX compounds.

- Synthetic Raincoats, Ponchos, and Clothing Bags — U. S. Army
- Camouflage Ponchos and Parka Suits — U. S. Navy
- Life Saving Suits — U. S. Coast Guard
- Bomber Runway Carpets — U. S. Army Air Corps
- Woven Glass Tubes for insulation of aircraft fuel and oil lines
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- Pontons — U. S. Army
- Three-Dimensional Flexible Topographic Maps—U.S. Marine Corps
- Shoe Adhesives — U. S. Army and U. S. Navy

GRS latex types, 2, 3 and X-160, normal and concentrated, available from stock

General Latex & CHEMICAL CORP.

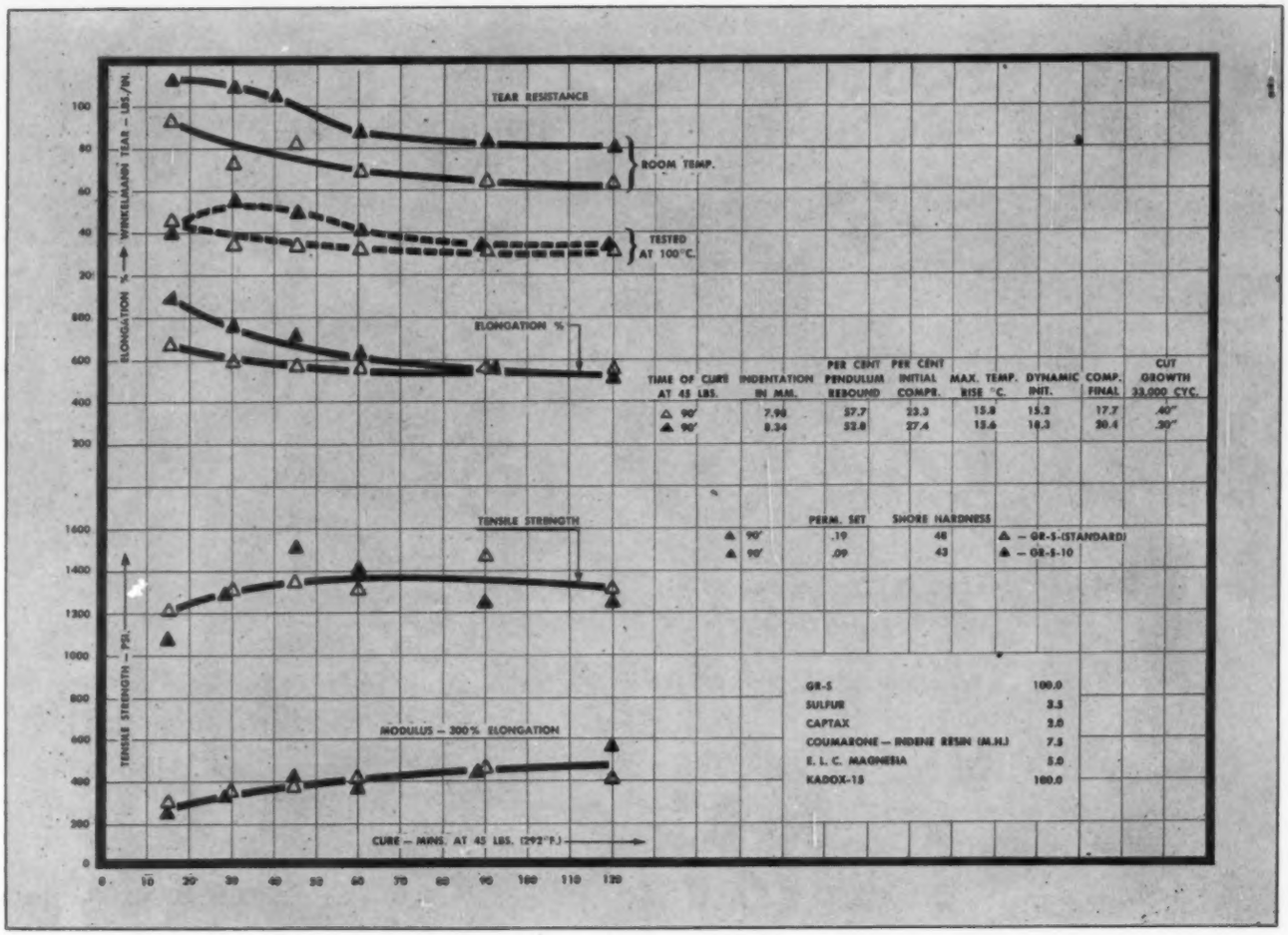
666 MAIN STREET, CAMBRIDGE, MASS.

Agents for Rubber Reserve Company for storage and distribution of natural rubber latex. Distributors for Rubber Reserve Company for synthetic latex. Operators of the Government-owned Baytown, Texas, synthetic rubber plant in collaboration with the General Tire & Rubber Co.

Technical Bulletin No. 9

on the Compounding of GR-S with Substantial Loadings of Zinc Oxide

GR-S vs. GR-S-10 (Rosin Soap Polymer)


TEAR RESISTANCE
ROOM TEMP.
TESTED AT 100°C.
ELONGATION %
TENSILE STRENGTH
MODULUS – 300% ELONGATION
CURE – MINS. AT 45 LBS. (292°F.)
TIME OF CURE AT 45 LBS. | INDENTATION IN MM. | PER CENT PENDULUM REBOUND | PER CENT INITIAL COMPR. | MAX. TEMP. RISE °C. | DYNAMIC INIT. | COMP. FINAL | CUT GROWTH 33,000 CYC.
△ 90′ 7.98 57.7 23.3 15.8 15.2 17.7 .40″
▲ 90′ 8.34 52.8 27.4 15.6 18.3 20.4 .30″
PERM. SET | SHORE HARDNESS
△ 90′ .19 48 △ – GR-S-(STANDARD)
▲ 90′ .09 43 ▲ – GR-S-10
GR-S 100.0
SULFUR 3.5
CAPTAX 2.0
COUMARONE – INDENE RESIN (M.P.) 7.5
E. L. C. MAGNESIA 5.0
KADOX-15 100.0

Preliminary work with GR-S-10 in comparison with standard GR-S indicates that improved results are obtainable with Zinc Oxide loadings in the modified polymer.

GR-S-10 gives slightly better tensile, distinctly better tear at both room temperatures and 100°C., and better cut-growth resistance. GR-S-10 is somewhat slower curing than standard GR-S and the pendulum rebound for the new polymer is lower, but the heat generation is equal. This suggests that the rosin soap polymer may show a greater improvement in rebound at elevated temperatures than GR-S.

This point is being investigated, as well as a study of accelerator-sulfur ratios, and will be reported later.

Uniform Quality

HORSE HEAD ZINC OXIDES

THE NEW JERSEY ZINC COMPANY

160 FRONT STREET • NEW YORK 7, N. Y.

Products Distributed by **THE NEW JERSEY ZINC SALES COMPANY**

NEW YORK • CHICAGO • CLEVELAND • SAN FRANCISCO

SILICAL

(NEWFOUNDLAND PYROPHYLLITE)

As A Dusting Material for Cured and Uncured Rubber Products

★

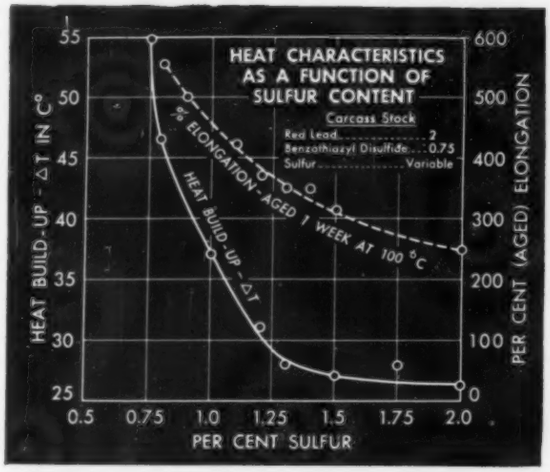
SILICAL Because of its Soft Texture, Freedom from Mica and High Surface Area is Being Used As a Dusting Talc. It Eliminates Surface Tack and Gives a More Uniform Coverage With a Minimum Amount Applied

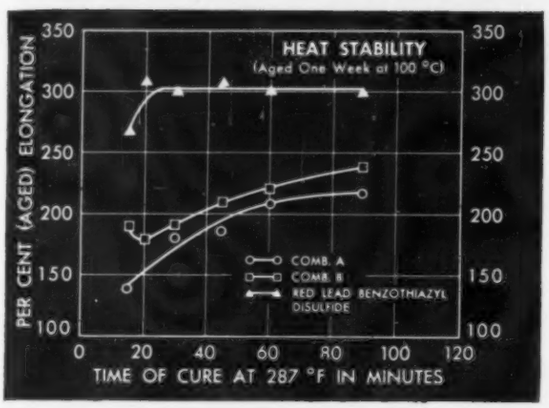
★

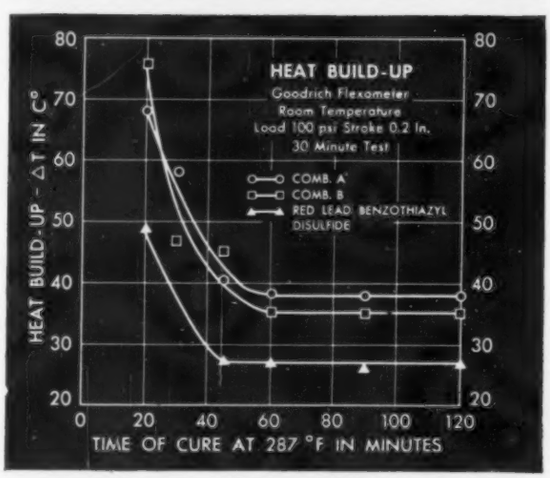
HERRON BROS. & MEYER

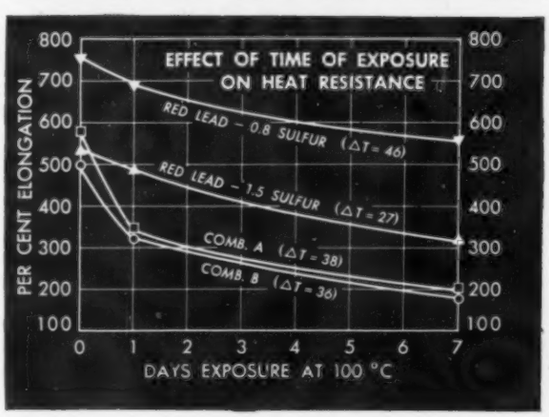
82 Beaver Street, NEW YORK 5, N. Y.

516 Ohio Bldg., AKRON, OHIO


HEAT CHARACTERISTICS AS A FUNCTION OF SULFUR CONTENT
Carcass Stock
Red Lead.....2
Benzothiazyl Disulfide....0.75
Sulfur.....Variable
% ELONGATION - AGED 1 WEEK AT 100 °C
HEAT BUILD-UP - ΔT
HEAT BUILD-UP - ΔT IN C°
PER CENT (AGED) ELONGATION
PER CENT SULFUR


HEAT STABILITY
(Aged One Week at 100 °C)
COMB. A
COMB. B
RED LEAD BENZOTHIAZYL DISULFIDE
PER CENT (AGED) ELONGATION
TIME OF CURE AT 287 °F IN MINUTES




EFFECT OF TIME OF EXPOSURE ON HEAT RESISTANCE
RED LEAD - 0.8 SULFUR (ΔT = 46)
RED LEAD - 1.5 SULFUR (ΔT = 27)
COMB. A (ΔT = 38)
COMB. B (ΔT = 36)
PER CENT ELONGATION
DAYS EXPOSURE AT 100 °C

Heat build-up and heat stability . . . both improve when you compound GR-S with RED LEAD

Have you had difficulty making your GR-S carcass stocks both heat resistant and cool running?

If so, try the right combination of red lead, benzothiazyl disulfide and sulfur.

Its acceleration is sufficiently active and efficient to provide—concurrently—heat stability and low heat build-up.

Note the following table and the accompanying charts.

FORMULA

GR-S (Institute)	100
S.R.F. Black	30
Zinc Oxide	3.0
Paraflux	7.5
No. 2 R.M. Red Lead	2.0
Benzothiazyl Disulfide	0.75
Sulfur	1.5

Physical Properties

T/287° F.	Tensile Strength	% Elong.	T-300	Shore	ΔT° in C°
15	1520	860	315	....	....
20	1630	780	390	46	49
30	1450	630	520	47	47
45	1330	530	570	47	27.5
60	1210	480	520	47	27
90	1130	500	590	47	26
120	1100	500	610	47	28

	Aged One Week at 100° C.			Aged 48 Hours at 100° C.	
T/287° F.	Tensile Strength	% Elong.	T-300	Shore	ΔT° in C°
15	910	270	.....	....	....
20	1080	320	1000	54	30.5
30	990	300	990	54	30.5
45	1050	310	1000	53	29.5
60	1130	300	1090	53	26
90	1090	300	1090	53	25
120	1160	340	1100	53	25

° Goodrich Flexometer operated at room temperature. 30 minute tests. Load 100 psi, stroke 20%.

SUMMARY OF ADVANTAGES

1. Imparts improved heat resistance—retention of elasticity.
2. Imparts improved heat build-up—cooler running.
3. Relatively faster curing rate.
4. Safe processing.
5. Excellent general physical properties.
6. Broad curing plateau—very little change in properties on overcures.
7. Economical.
8. Available.

The charts illustrated are taken from a report on recent experimental work by the Rubber Division of our Research Laboratories on the problem of heat build-up and heat stability in GR-S stocks. Write for your copy. The report is titled, "The Heat Problem in GR-S Carcass Stocks."

NATIONAL LEAD COMPANY New York, Buffalo, Chicago, Cincinnati, Cleveland, St. Louis, San Francisco; Boston (National-Boston Lead Co.); Pittsburgh (National Lead & Oil Co. of Penna.); Philadelphia (John T. Lewis & Bros. Co.).

This is a call to America's Heart

Your Red Cross faces its greatest task

THIS is the most important appeal for funds in the history of the American Red Cross.

After three years of war the work of your Red Cross is greater than ever. It must serve millions of our fighting men abroad. Lonely men. Homesick men. Wounded men. The Red Cross lends a helping hand to the thousands of returning service men—sick, wounded—desperately in need of friendly guidance.

And remember, YOU . . . and *you* alone . . . keep the Red Cross alive. There are no special funds to keep up its great humanitarian work. The money must come, as always, from the heart of America—you!

We must keep the Red Cross at the side of our fighting men and our wounded heroes. We must help the Red Cross in its vital job of sending food and medicine to war prisoners . . . aiding the ill and lonely overseas . . . collecting life-giving blood plasma. Every Red Cross worker is your personal messenger to your man in uniform.

GIVE *NOW*_
GIVE *MORE*

Keep your RED CROSS *at his side*

★ *Prepared by the War Advertising Council in cooperation with the Office of War Information and the American Red Cross* ★

NET WEIGHT 50 LBS
KOSMOS 40
KOSMOS 40
UNITED CARBON COMPANY INC.
KOSMOS 40
DUSTLESS CARBON BLACK
U. S. A.
KOSMOS 40
KOSMOS 40
MADE IN U.S.A.
PATENTS APPLIED FOR

KOSMOS 40

This latest furnace-process reinforcing carbon black (HMF type) for synthetic and natural rubber possesses a combination of most desirable characteristics—

- cool mixing
- easy processing
- smooth and rapid extrusion
- fast rate of cure
- full reinforcement
- low heat build-up
- high resiliency
- high resistance to cut growth, flex cracking and abrasion.

Kosmos 40 is especially useful for tires of all types, pneumatic or solids, under any conditions; tubes, bogie wheels; footwear; and mechanical goods.

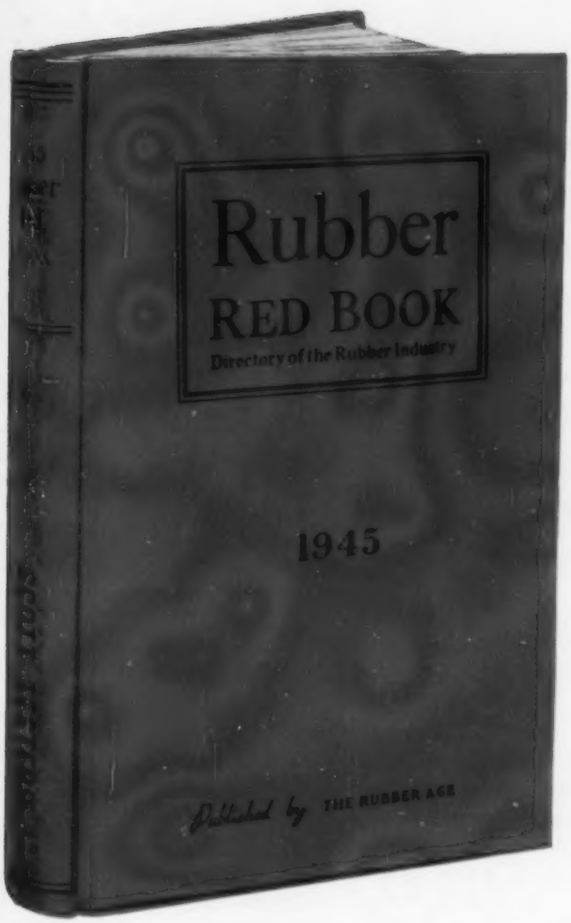
Try a 50-50 blend of Kosmos 40 and channel black for tread stock to secure better plasticity. It will make it possible for you to dispense with one milling and thus—which is so important now—INCREASE YOUR OUTPUT.

RESEARCH DIVISION

UNITED CARBON COMPANY, INC.

Charleston, West Virginia

Plan Now for Space in the 1945 RUBBER RED BOOK!



The Fifth Issue of the RUBBER RED BOOK —the 1945 Edition—is scheduled for publication this summer.

This edition will be completely revised and enlarged, and will reflect the many changes in plants, products, materials and personnel which have taken place in the rubber industry during the past two years.

Already many former advertisers, without waiting for any announcement, have ordered space in the new edition. Hundreds of requests have also been received from users who are anxious to get copies of the 1945 issue.

All of this advance interest indicates that the 1945 issue will be in greater demand than any previous edition and accordingly our print order will be increased to take care of the needs of the industry.

In a few short years the RUBBER RED BOOK has become the indispensable buyer's guide for the whole industry. Hundreds of letters testify to the fact that rubber plant purchasing agents, chemists, engineers, as well as Government procurement agencies and laboratories, use this book as their primary source of buying information. As a result, suppliers have found that the use of space in the RUBBER RED BOOK is an effective means of calling their products to the attention of these key men —and at a low cost, too!

Space Limited This Year

Advertising space in the 1945 edition will be limited due to the necessity of staying within our paper quota. Therefore we urge all suppliers contemplating the use of space in this edition to send in their reservations early for no advertising will be sold after the limit of the available space is reached.

Rate cards and order forms are being mailed to all suppliers. If you do not receive a copy, write for one today. In the meantime, brief rate data is included in the accompanying box to assist you in determining your needs.

Send in your order early!

1945 EDITION
Cost of Space

1 page	$100.	2 pages	$190.
½ page	55.	2 half pages	106.
¼ page	30.	2 ¼ pages	58.

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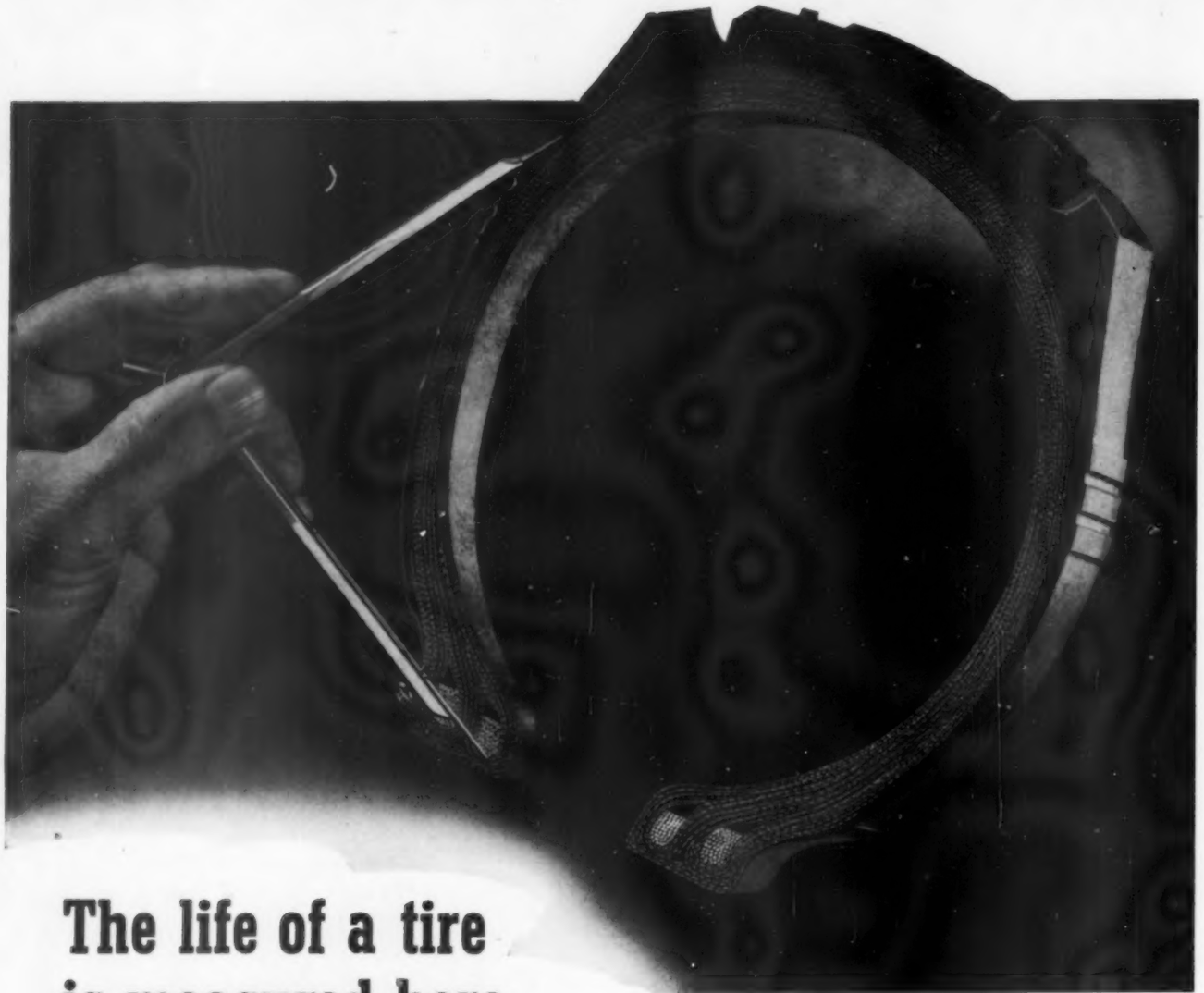

The life of a tire is measured here

SURE, it's the tread on a tire that is actually *worn away.* But the tread can be replaced again and again. The real *life* of the tire is determined by the *carcass,* and the *bead.* That's because, no matter how fine or how frequent your recap jobs, a tire just *can't live longer* than any *one* of these *vital parts.*

The bead, especially, is an extremely *critical part* of a tire's structure. And it is only by the use of high quality steel wire, correctly applied in the bead construction, that tires have the strength and rigidity necessary for long trouble-free service. So no wonder leading tire manufacturers set such high standards of workmanship and specify National-Standard steel wire for bead making.

In close cooperation with rubber engineers, National-Standard is continually developing better and better wire for tires and scores of other wire-and-rubber applications. Since the early days of the rubber industry, improving the quality of wire for tires and developing time-saving wire applying machines, has been one of our primary concerns.

Take advantage of our skill and experience by letting us help you work out new uses for wire-and-rubber in your products.

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There are FB MILLS to suit your needs exactly

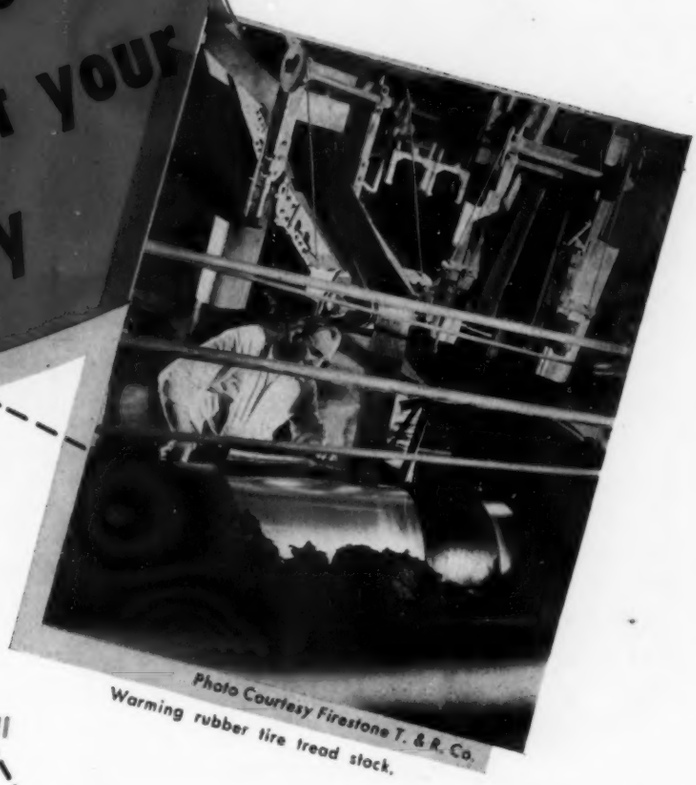
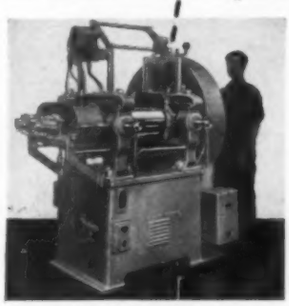


Photo Courtesy Firestone T. & R. Co.
Warming rubber tire tread stock.

If it is a job for a mill, we will build a mill for the job.

This is nothing new. We have long made it a practice to ask each purchaser to tell us what he wants to accomplish so that we can furnish a mill to suit his individual requirements. The result may be a standard machine, a modification of a standard mill or a new design throughout, depending on the job to be done.



8"x16" Plastics Mill for laboratory use.

In a great many instances the mill supplied is a "standard" machine with but minor modifications and a few special attachments—because, in a long lifetime, we have built mills for almost every conceivable application. Among these are mills for processing natural and synthetic rubber, cellulose compounds, pyroxylin plastics, synthetic resins, caseins, shellac compounds, Bakelite, celluloid, explosives, abrasives, linoleum and phonograph record stocks.

Before you decide on a mill—for either laboratory or production use—we suggest you ask our engineers for recommendations and obtain the benefit of their broad experience.

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Sales Offices: Ansonia, Buffalo, New York, Pittsburgh, Akron, Los Angeles
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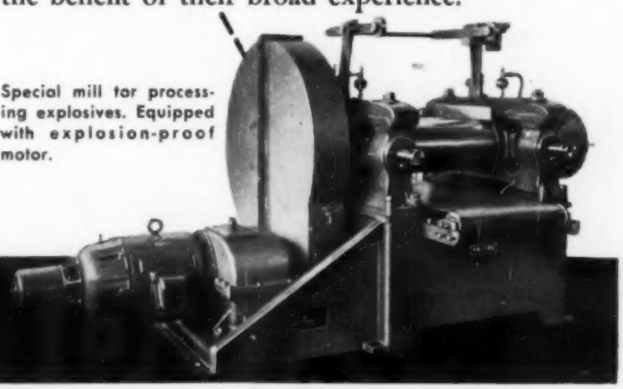

Special mill for processing explosives. Equipped with explosion-proof motor.

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An Easily Dispersible Treated Gilsonite for Reinforcing and Improving Processing of GR-S Compounds . . . . . .

The addition of about 10 parts of Insulac with a maximum loading of carbon black or other pigment in a GR-S compound usually increases the tensile and elongation while reducing the modulus.

Added early in the mixing cycle, Insulac W aids in the dispersion of most pigments, promotes ease of extrusion and calendering of most formulations.

In GR-S insulation compounds Insulac W increases insulation resistance and lowers moisture absorption, capacity, and power factor characteristics.

Literature may be obtained by writing:

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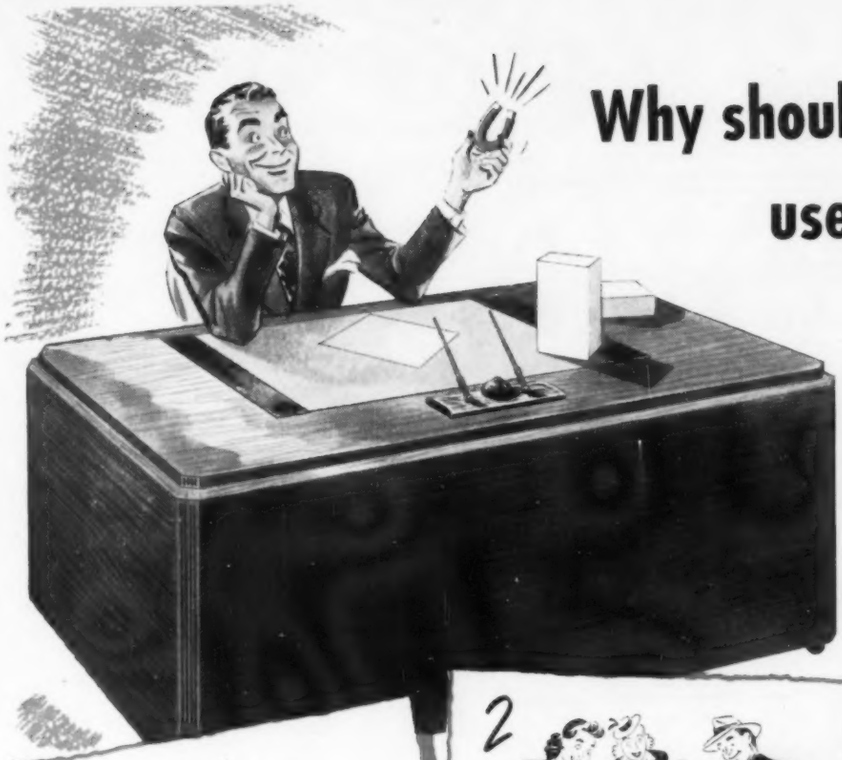


Why should a folding carton user keep a magnet on his desk?

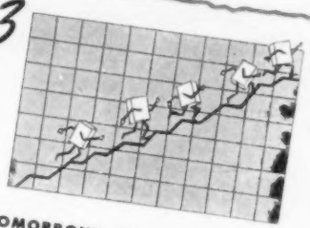
1

TO REMIND HIMSELF that one important way to get extra sales without extra sales expense is to see that his cartons have more point-of-sale "magnetism"...more power-of-attraction than his competitors'.

2

MILLIONS OF DOLLARS' WORTH of merchandise is sold, every year, on display, alone. In thousands of stores, impulse or "pick up" sales account for more than 50% of the volume rung up on the cash registers.

3



TOMORROW, THAT PERCENTAGE will climb even higher. More supermarkets, more self-serve departments, more open shelf and counter displays will put a bigger than ever share of the selling job on your package.

4

GET THE HELP of Gardner-Richardson specialists in putting more point-of-sale magnetism in your folding cartons. Let us demonstrate that package effectiveness is not a matter of greater cost but of ideas.

DON'T BE AFRAID TO CHANGE YOUR PACKAGE. "Sacred cows" belong in pastures, not in competitive battles on the nation's shelves and counters. Turn your folding cartons over to our staff of engineers, designers, merchandising experts. Put it up to them to come through with suggestions that will give your postwar folding cartons more eye and buy appeal. Maybe they can also show you how to make your cartons more attractive to the customer, easier to use. Or how to simplify set up, speed up filling machine performance. Write, today. Tell us how and where you want help. It's yours, without obligation.

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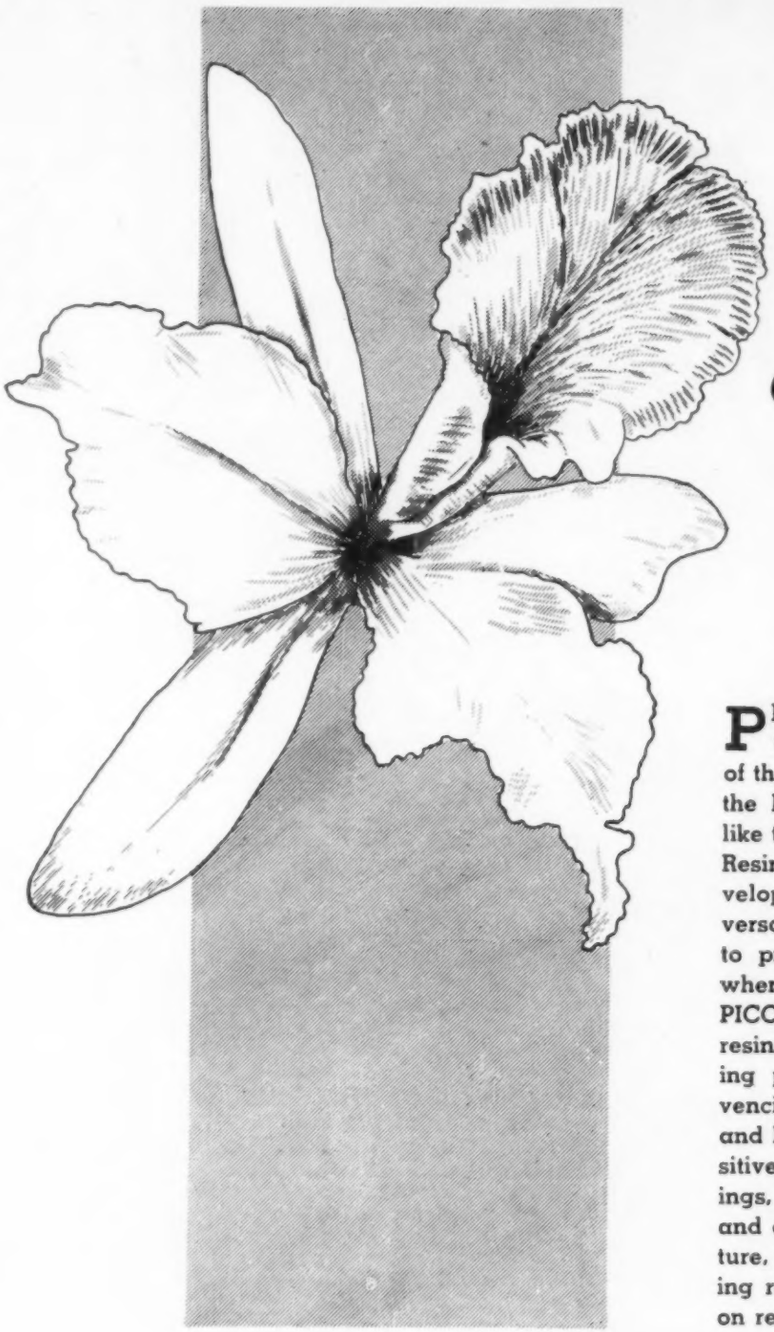

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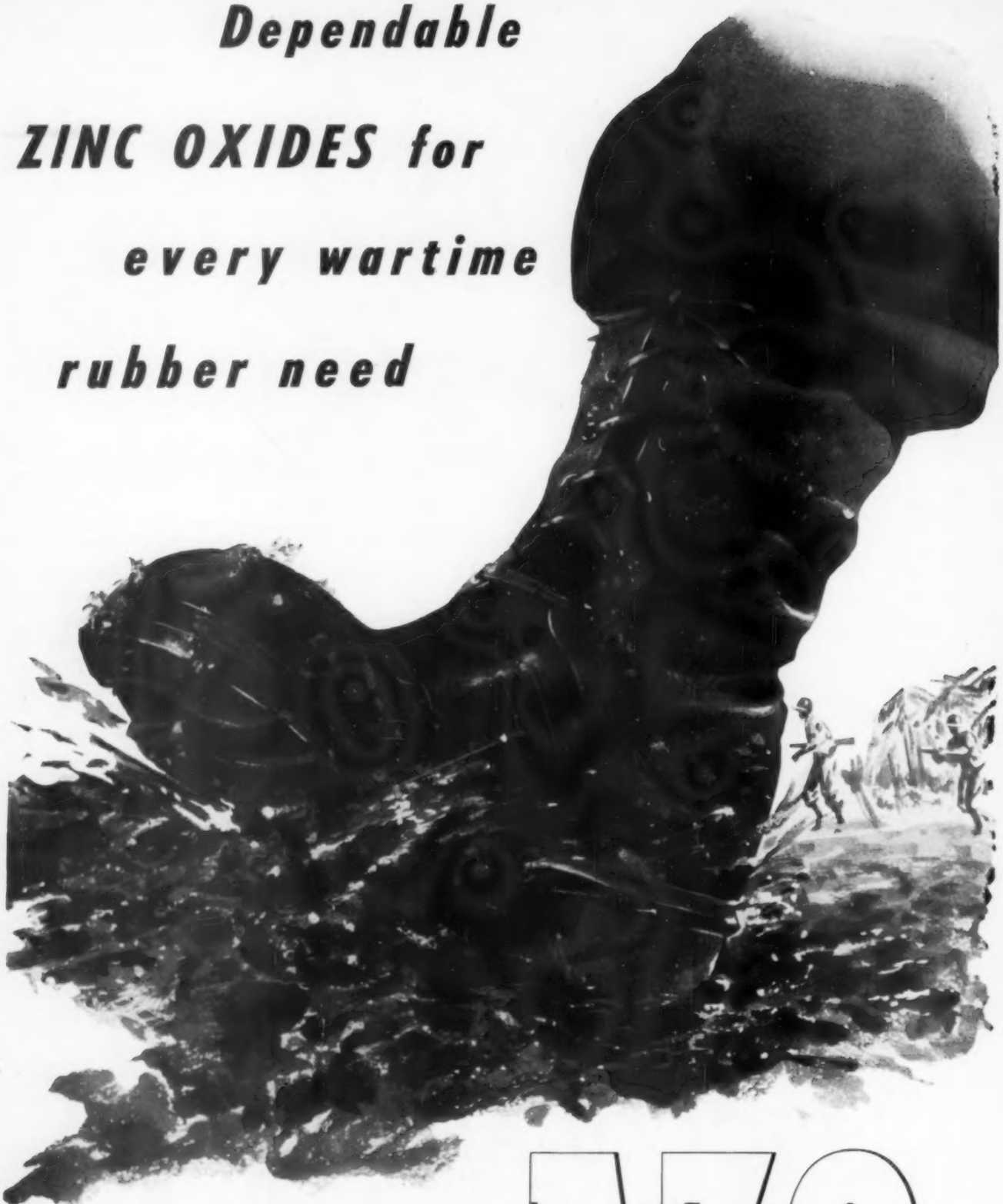

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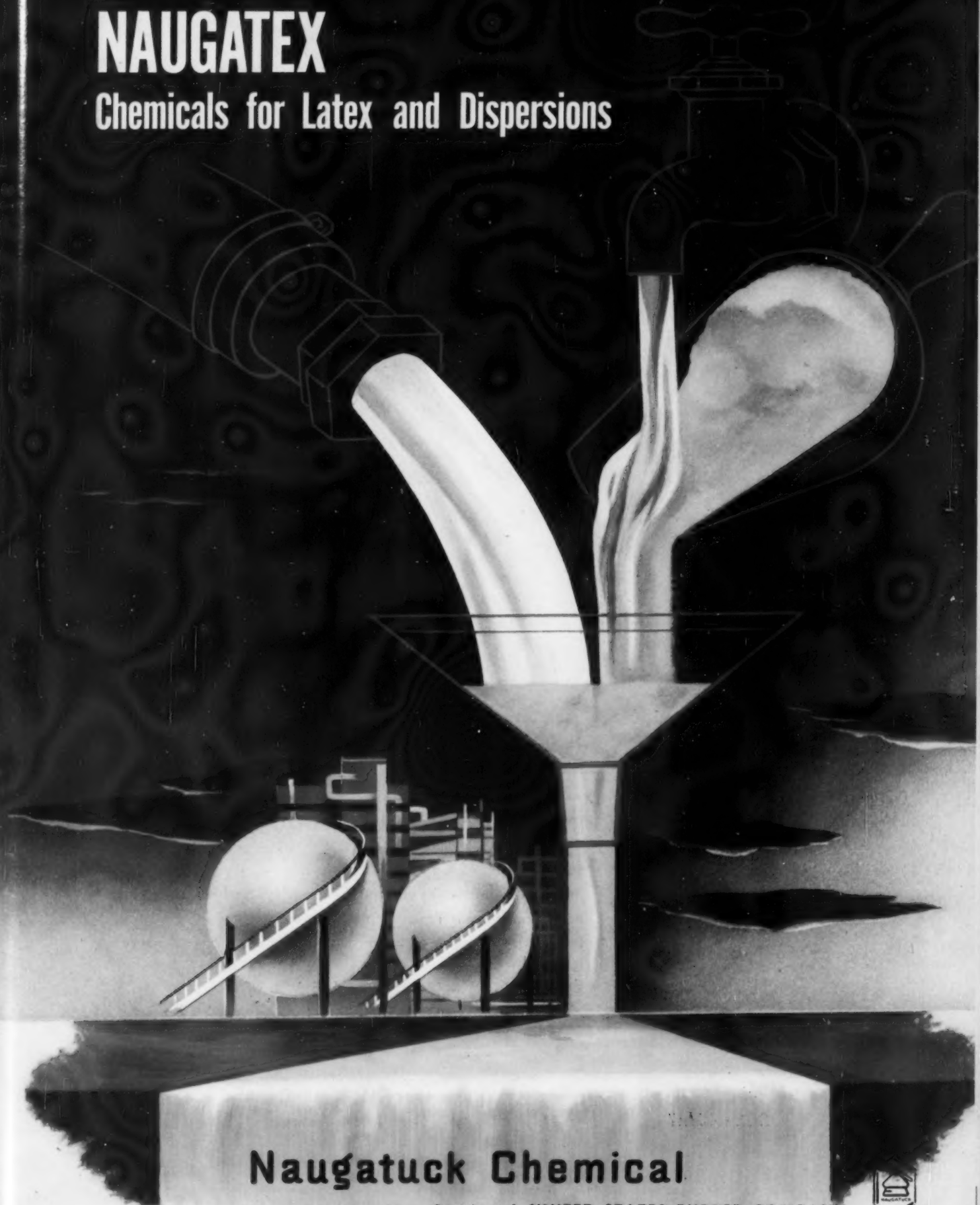

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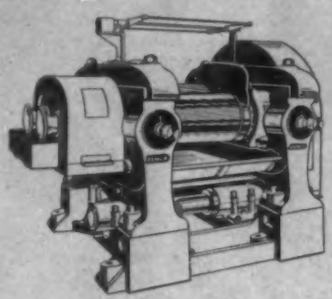
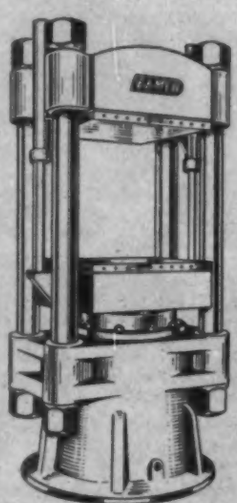


EEMCO CRACKER



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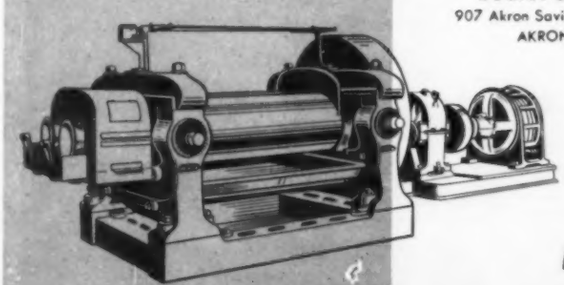

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Outstanding features of the line of Rubber and Plastics Processing Machinery manufactured by EEMCO are (1) correct design (2) sturdy and dependable (3) built for heavy duty and long life with minimum repair. All EEMCO Rubber and Plastics Processing Machinery is built in smaller sizes for laboratory use. Mills, Crackers, Refiners and Washers are furnished as single units or for operation "in line" of two or more. Floor level drives are provided when wanted. Write EEMCO for your Rubber or Plastics Processing Machinery needs—early deliveries are now being made. Bulletins on desired machines will be sent, on request.

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. . . for all operations where rubber cement was formerly used.

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Samples gladly sent upon request.

UBS's War Record ★ ★ ★

1942 • UBATEX—first flexible waterproof latex made available for general use when rubber latex was restricted.

1943 • UBAGRIP—a tested neoprene base cement made available to general industry the day neoprene was released.

1944 • SYNTHETIC LATEX (neoprene)—kept and is keeping latex operations going, now that rubber latex is out.

1945 • UBAPOL—the first synthetic rubber solvent cement compounded from a new base developed exclusively for cement purposes.

Address all inquiries to the Union Bay State Chemical Company, Rubber Chemicals Division, 50 Harvard Street, Cambridge 42, Massachusetts.

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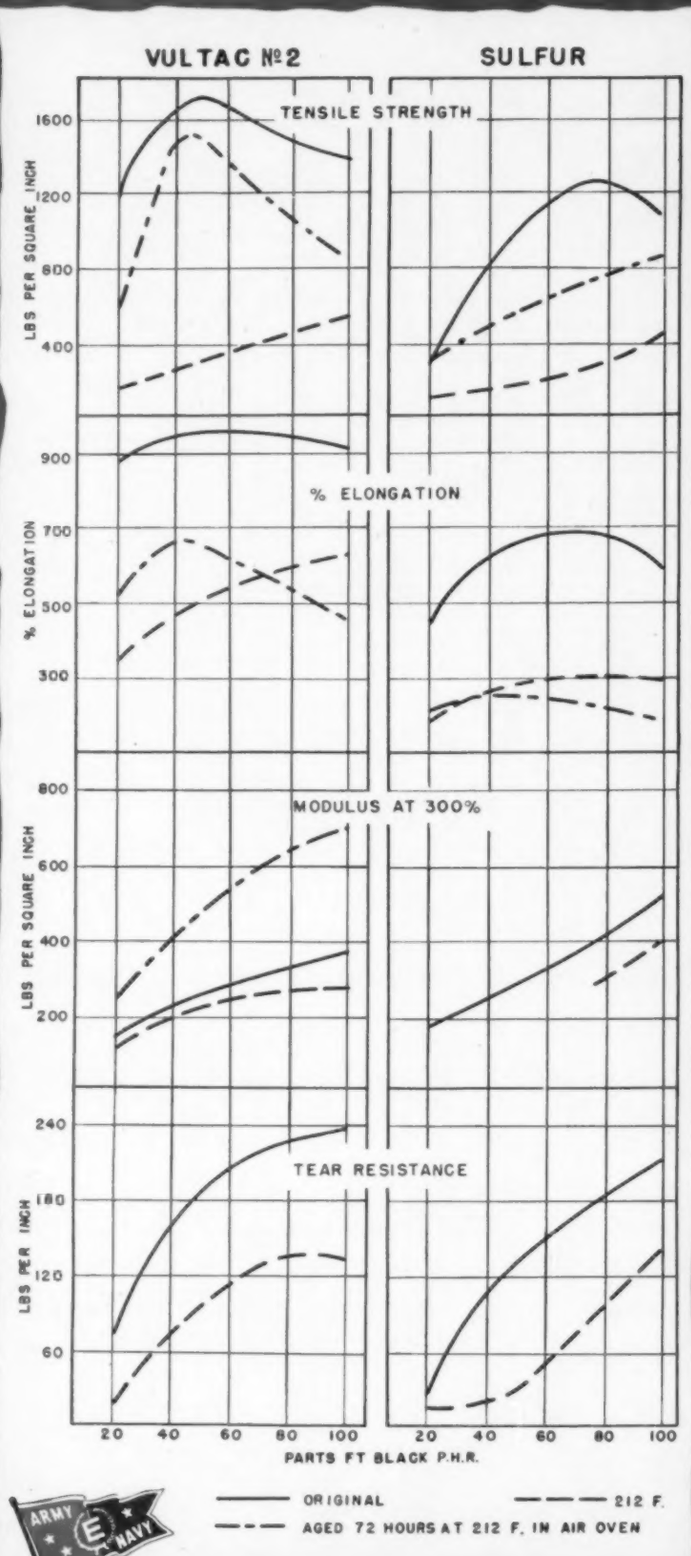
VULTAC ... DEVELOPS THE LATENT REINFORCING PROPERTIES OF FT CARBON BLACK IN GR-S



In the compounding of natural rubber, Fine Thermal Black occupies a unique position as a reinforcing pigment. Its use in this polymer yields stocks possessing increased tensile strength, modulus and resistance to tear, at the same time retaining excellent elongation, resiliency and snappy cure. By virtue of this combination of properties, it was used extensively in the compounding of heavy duty inner tubes. Unfortunately, Fine Thermal Black has not given results in the compounding of GR-S commensurate with its performance in natural rubber, and is generally used in GR-S only in combination with other carbon blacks. It has now been found, however, that this black may be adapted successfully to the compounding of GR-S as a primary reinforcing agent through the use of VULTAC, a new type of organic vulcanizing agent.

PROPERTIES:

VULTAC NO. 2 is an alkyl phenol disulfide containing 23% sulfur. It is a hard brown resin having a specific gravity of 25/25° C. of 1.16-1.17 and a softening point of 55-65° C. It disperses readily in GR-S under normal milling conditions and functions as a processing aid to give pliant, smooth-milling stocks, possessing excellent building tack. This latter property is particularly outstanding in the case of GR-S stocks loaded with FT Black.

VULTAC NO. 2 improves the dispersion of FT Black in GR-S. Unlike pigment sulfur which possesses limited solubility in GR-S, Vultac No. 2 is readily soluble in this copolymer. During cure, active sulfur is released to give uniformly vulcanized products. The cumulative effect of improved pigment dispersion and uniform vulcanization is to bring out the full latent reinforcing power of FT Black in GR-S. The superior properties which may be achieved by the adaptation of this new vulcanizing agent to GR-S—FT Blacks formulations are illustrated in the accompanying charts.

FORMULATIONS:

The compounding results upon which the graphs were plotted were taken in the Sharples Rubber Laboratory using the following base formula and curing conditions:

GR-S		100
Bardol		5
Zinc Oxide		5
FT Carbon Black		Varied
Captax		1.6
DPG		0.1
	Vulcanizing Agent	
Vultac No. 2	7.0	—
Sulfur	—	1.6

Optimum cures at 280° F. selected from "Modulus—time of cure" curves.

ADVANTAGES:

The data presented indicate the following advantages are inherent in the use of Vultac No. 2 in conjunction with FT Black in GR-S:

1. Tensile strength, elongation and resistance to tear are increased greatly over a wide range of loadings.
2. The retention of all physical properties upon severe heat aging is markedly improved.
3. The tendency toward "marching modulus" upon aging is minimized.
4. The maximum reinforcement is effected with lower pigment loading — 50 parts of black with Vultac No. 2 as compared with 75 parts for sulfur-vulcanized stock.

In addition to the properties shown by graph, the flex-cracking resistance of GR-S—FT black stocks cured with Vultac No. 2 is outstandingly superior to that of the corresponding sulfur vulcanizates.

AVAILABILITY:

VULTAC is also supplied in two other forms to meet the varying requirements of the rubber industry: Vultac No. 1 containing 13%, and Vultac No. 3, 28% sulfur. All three are now available in commercial quantities against orders specifying a "synthetic rubber" end use.

For additional data and suggestions for the use of Vultacs, write for your copy of the Sharples Booklet 44-1, entitled "VULTAC." Samples of these interesting new vulcanizing agents will be sent upon receipt of your request.

ARMY E NAVY

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The Air Corps Gets a "Lift" with MT. VERNON Fabrics

This lifting bag, one of the many used to raise bogged-down army planes in terrain where jacks cannot be used, is typical of the diversified use to which MT. VERNON fabrics are put by the rubber industry. Because of the care with which they are woven, MT. VERNON fabrics assure more satisfactory fabrication of rubber products. For the ultimate in fabrics with a high degree of uniformity, specify MT. VERNON.

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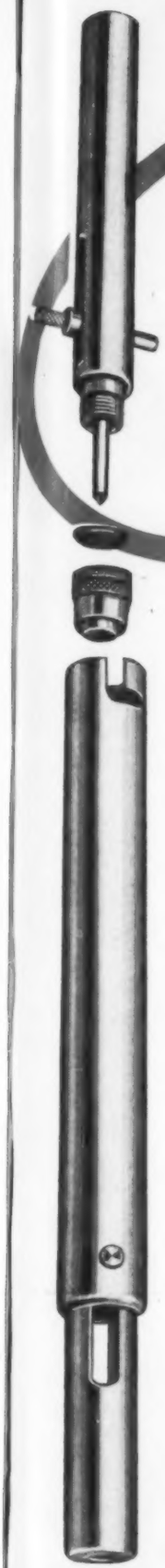


The "Precision" TEAR TESTER

THE ONLY METHOD
for Determining
PUNCTURE-TEAR RESISTANCE

Developed to provide puncturing conditions simulating conditions of service. Direct comparison can be drawn for such products as tires, inner tubes, conveyor belts, and hose covers. Also used to measure stitching qualities (needle resistance) of shoe sole stocks. Since it also measures a property not heretofore measured, it is a useful tool in production control, research and development work.

The apparatus is used in conjunction with the conventional Rubber Tensile Testing machine. No other additional load recordings and extension pulling apparatus is needed. The specimen is held firmly in place by the cap.

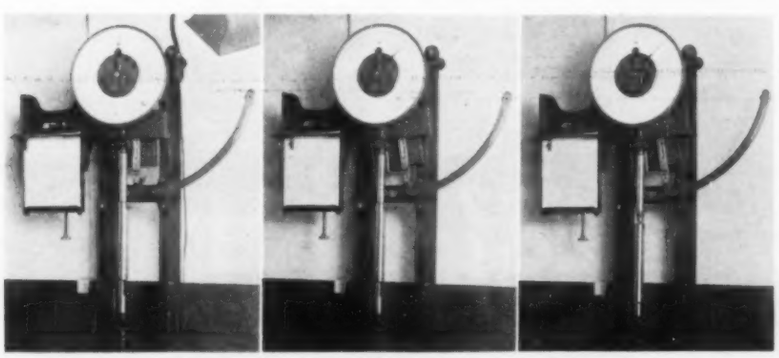
The puncturing point penetrates the test disc at the center and at right angles. Tearing preceded by the puncturing is at right angles to the surface and to the applied force. There is no irregular cross-sectional area produced to introduce a variable. This feature makes the apparatus extremely consistent and accurate.

This test is extremely rapid and can be conducted in one minute by an unskilled operator.

See your laboratory supply dealer for this and other recommended apparatus for your laboratory.

Illustration showing use in conjunction with the Scott Tensile machine.

Send for new Rubber and Plastics Testing Equipment Catalog K



BEGINNING OF TEST END OF TEST CHANGE POSITION

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A few additional items for your laboratory

NEEDLE JIG FIXTURE

This instrument used to produce a uniform hole in the De Mattia Flexing Test specimen for cut-growth test.

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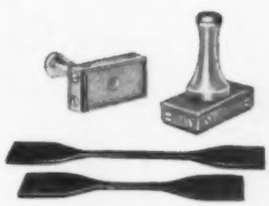
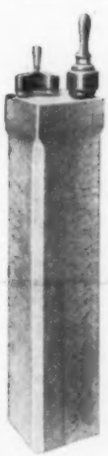
Used to test rubber gaskets to specification 33R9-INT. Duplicates service conditions.



GAGE MARKER

For marking elongation marks on tensile test specimen, makes both 2" and 1" marks. Fine line produces less error. Light weight —made to fit hand.



DIE BLOCK

For cutting tensile test pieces. Made from carefully selected end maple 8" square, convenient 3' height. Mounted on sponge rubber to absorb shock.

DIES

Dies of all sizes for tensile and tear test, including 2" x ½", 2" x ¼", 1" x ¼", 6" x 1" and 1.129" diameter —all to ASTM specifications.

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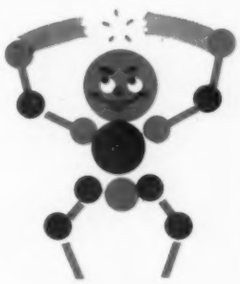

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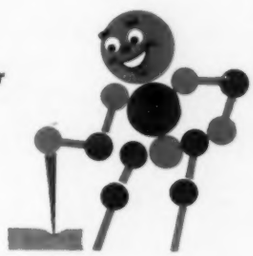

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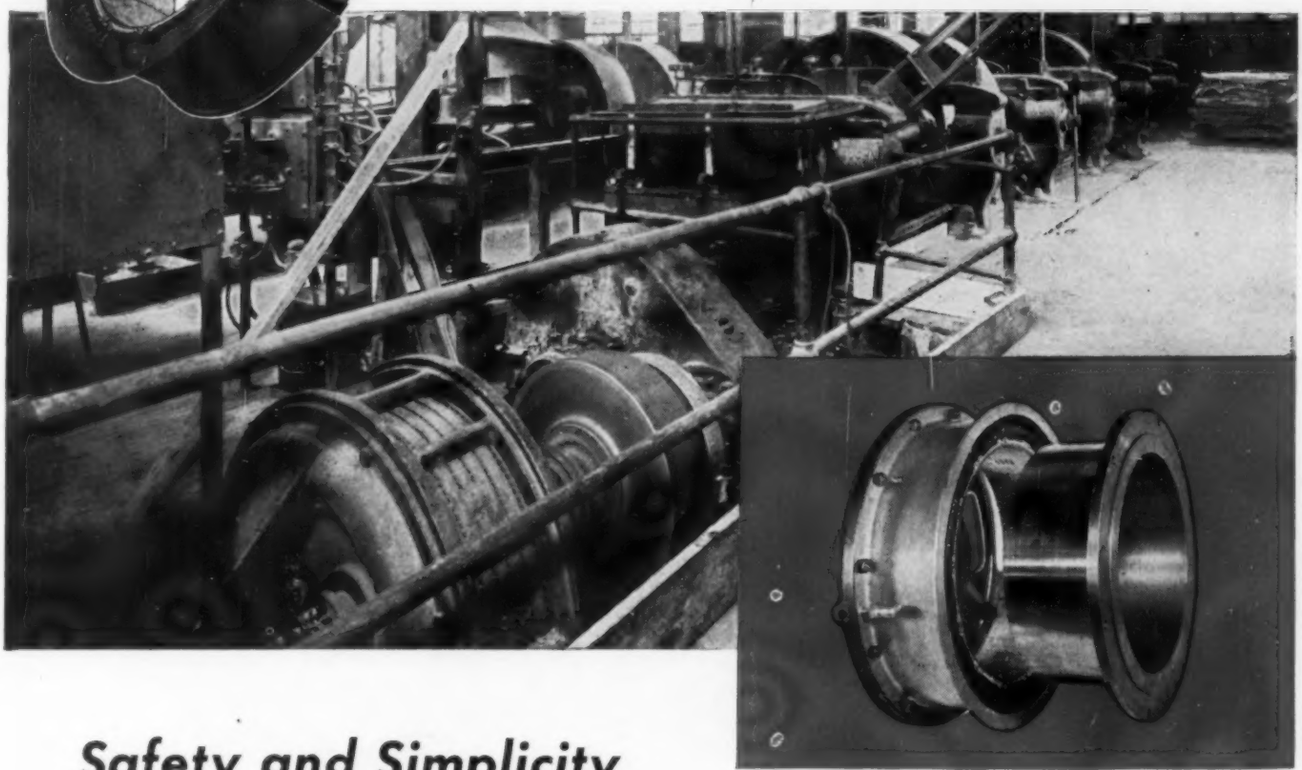

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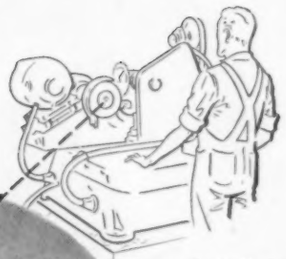

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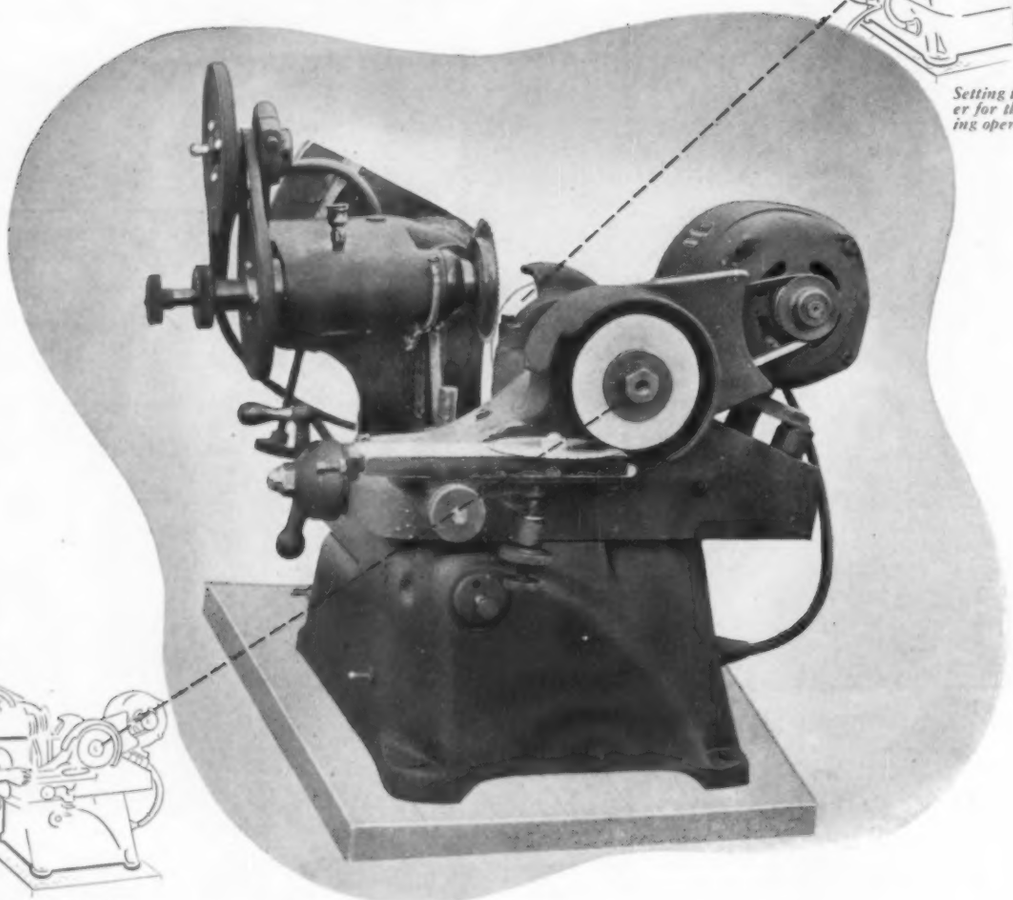

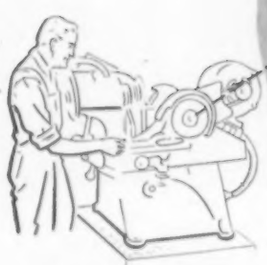

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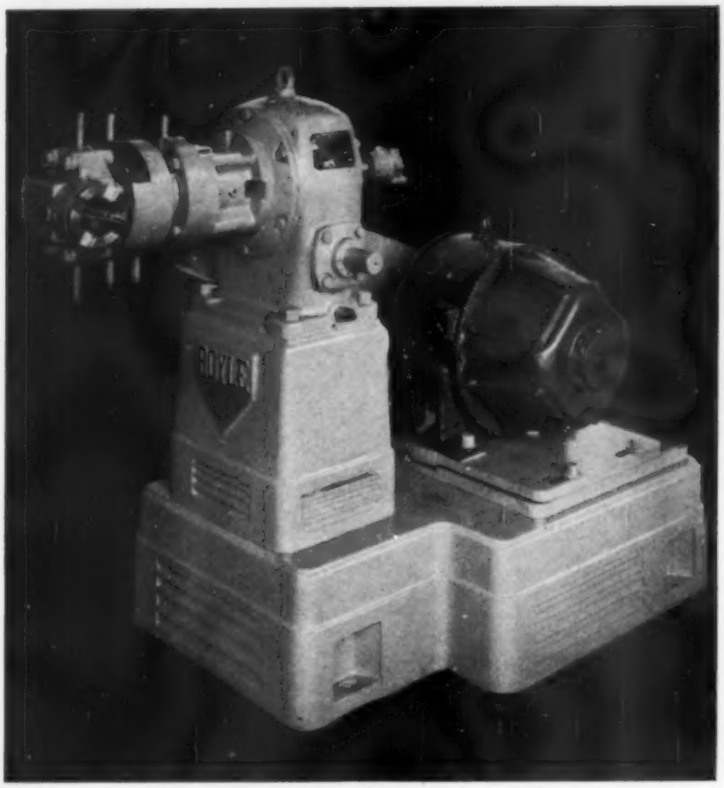

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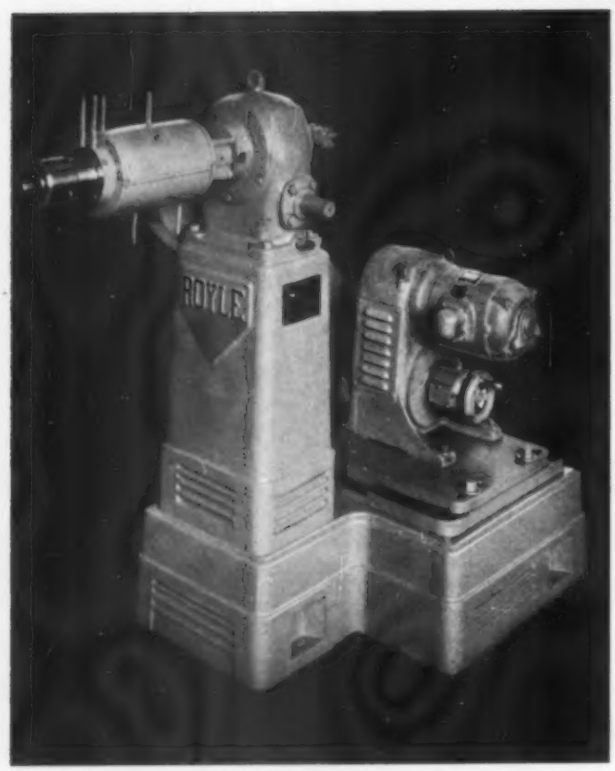

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The **RUBBER AGE**

VOL. 56, No. 6 **MARCH, 1945**

High-Speed Handling and Drying in the Cementing of Tire Fabric

By DWIGHT M. WILKINSON and ELMER HEISER

Industrial Oven Engineering Co., Cleveland, Ohio

THE advent of synthetic rubbers in tire construction introduced relatively serious problems in compounding, cord adherence, latex dipping, fabric cementing, and others. Practically all of these problems were overcome in due time. Some of them were quickly and satisfactorily solved; others were met with temporary solutions later improved upon. In some cases, however, the remedies were slow and expensive, and especially so in tire fabric cementing.

The fabric cementing, that is the application of fine milled natural rubber mixed with a solvent, is basically required as an adhesive coat on the fabric surfaces in synthetic tire production because of the absence of building tack in the grades of synthetics currently available to tire manufacturers. The addition of adhesives or tackifiers in compounds has been tried, but in giving some tackiness to the compounds they generally lower resiliency and tensile strength. Accordingly, cementing has generally been accepted as an expedient means of applying tackiness to the fabric.

At the start of the emergency most tire plants were equipped with spreader capacity so that the logical solution seemed to be to use horizontal spreaders for the process. These spreaders continued in use until management became aware of the slowness and high cost of the process, together with the serious danger of fires and explosions due to the high volatile solvents used and the high ratio of solvent to solids that was required to conserve our dwindling natural rubber supply.

Several years ago engineers of the Industrial Oven Engineering Co., in conjunction with technicians of a major rubber company, developed a continuous, safe and high-speed method of fabric cementing accomplished directly in the calender train at calendering speeds. Fig. 1 (herewith) indicates an elevational view of a post calender cementing unit in relation to the final 3-roll calender and the cooling drum while Fig. 2 indicates a front elevation showing the heating and exhaust equipment looking at the unit from the entering side.

In this article we will describe cementing of tire fabric at the calender and explain the design of adequate and proven equipment to overcome the many problems such processing imposes. It may be well to first state the problem or problems as they exist and then proceed with the description of equipment arrangement to eliminate, correct, or improve the conditions.

The primary factor for consideration is the extreme hazard connected with the use of highly volatile solvents. The large quantities of solvent used per unit time can create a very serious situation if ample provision is not made to prevent explosive vapor concentrations. Logically, proper ventilation is extremely important in this connection. In addition to the danger from explosive mixtures, there is also the mild toxic condition which should be taken into consideration for operator comfort.

Perhaps next in importance is the matter of static electricity build-up in the system. Fabric moving at high speed over numerous rolls builds up static electricity rapidly and the prevention of static discharges in the system is imperative. Static potentials of 300,000 volts are not uncommon.

The third consideration relates to space available for the cementing equipment at the calender. Due to the fact that in most cases the cement operation must be an addition to present equipment, it is necessary to "squeeze" it into existing space without drastically changing the present calender train layout. This fact brings up problems of accessibility, servicing and maintenance in the restricted area usually allotted for the cementing unit.

Another consideration which may require attention

in the future is the matter of solvent recovery. It may be impossible to include plans for a recovery system at the time of installation of the cementing equipment, but it is advisable to design with recovery system requirements in mind.

A fire protection system should also be considered as an absolute essential. An accepted system using CO_2 is incorporated with fire damper isolation of system actuated by automatic rate of rise release equipment. Suitably placed discharge nozzles are to flood the tower interior and dip tank zone. Ample CO_2 gas is discharged to maintain a high concentration for a period of five to ten minutes preventing the possibility of flashback fires. Although this resume is based on a design to minimize the danger of fire it must be recognized that safety precautions cannot overlook the human element of attendants and, accordingly, an adequate protection system should be given consideration and be included.

The above five points summarize the problem as it is usually encountered. The design to be described is based on these five points with consideration being given to additional inherent problems. Many installations, at varying calendering speeds from the lowest to the highest, some in operation for periods of twelve months or more, indicate the safety of the equipment designed to answer the problems involved.

Dipping System

As will be noted in Fig. 1, the fabric from the calender enters the system from the right, through the relatively small opening in the ventilated hood enclosing the dip tank. The fabric passes over an anti-static idler roll and then into the dip tank, then under two sealed bearing rolls, then up through an adjustable pair of scraper blades, and finally comes out through the narrow opening at the top of the lower enclosure.

The dip tank has a ventilated enclosure separate from the actual dry-off tower to localize potential hazards. Due to the fact that the vapors of the solvents currently used are approximately three to four times as heavy as air, the exhaust from the tank zone is taken from the lowest point possible. The dip tank with its separate enclosure has an exhaust collector duct around the base to take advantage of the natural tendency of the solvent vapors to settle. The design of the enclosure surrounding the dip tank is such that air at relatively high velocity is pulled in through the fabric slots and also

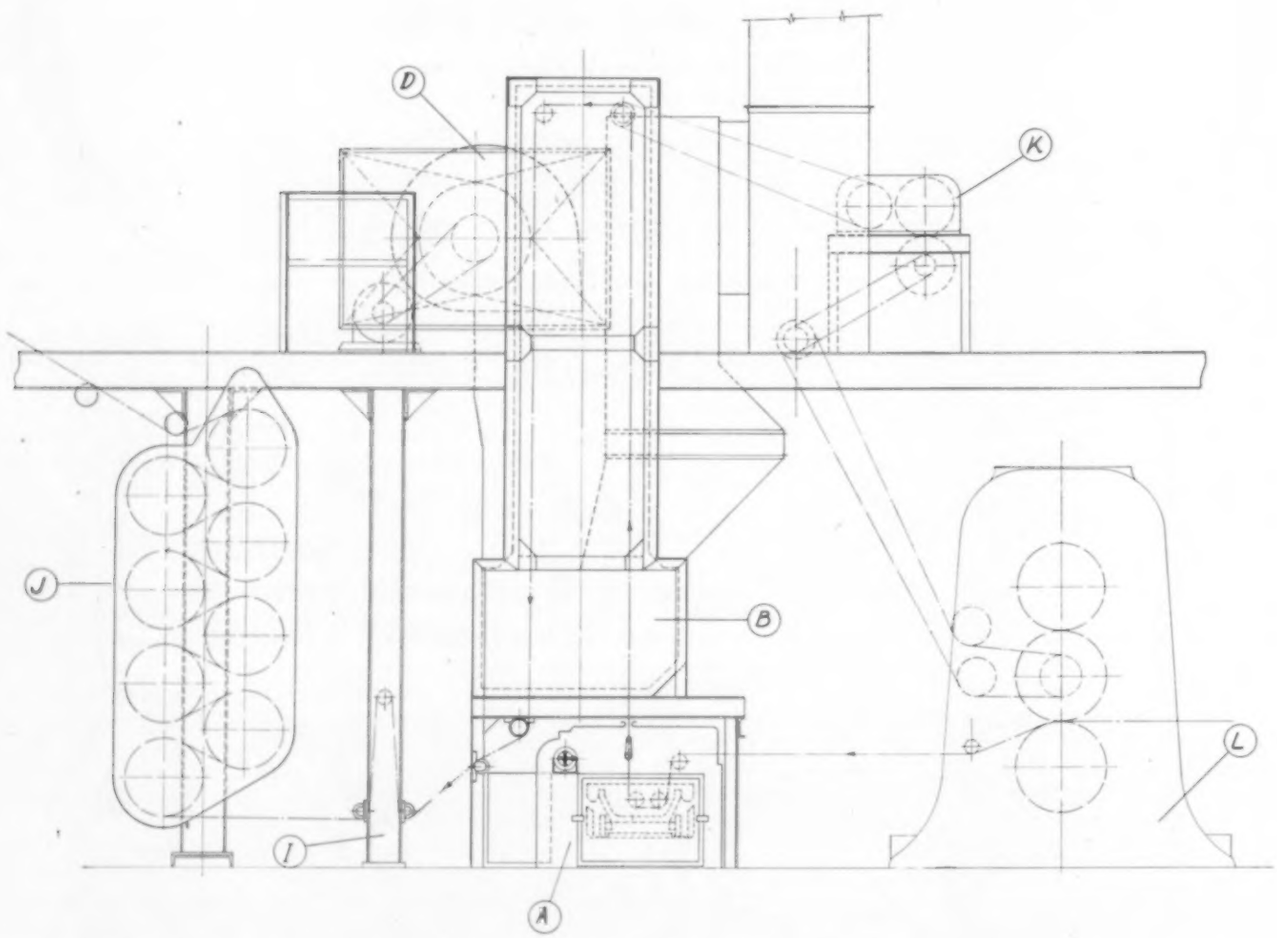

FIG. 1—Elevational view of a post calender cementing unit in relation to the final calender and the cooling drum.

A—Lower enclosure, coating adjuster, and removable tank assembly; B—Evaporator tower; D—Primary conditioned and humidified air fan; I—Compensator and tension control; J—Cooling drum; K—Mechanical or electrical helper drives for light fabrics and stock; L—3 or 4-roll calender.

through any possible openings in joints, etc. The enclosure surrounding the dip tank is arranged so that cover sections can be removed for threading the material and cleaning and servicing idler rolls, scrapers, etc.

The roll assembly at the dip tank is mounted in a rigid frame which is attached to the enclosure support. The dip tank is raised into the upper position under the rolls or lowered to the floor free of the rolls. The dip tank assembly is equipped with bayonet couplings which permit quick connecting and disconnecting of cement and water connections. The dip tank is also equipped with wheels to facilitate removal from the enclosure for cleaning, servicing, etc. The tank is furnished in a baked black japan finish to offer a smooth dense surface for easy stripping of the dried rubber. As an added safety measure, in the event of spillage, overflow troughs are included as an integral part of the tank.

A water cooling jacket is incorporated around the dip tank to reduce the temperature of the cement. The fabric as it comes from the calender will retain a certain amount of heat, the temperature of which will vary with the distance from the calender to the dipping unit and the speed of the fabric. It is safe to assume that the temperature of the stock will be somewhere between 160° and 180° F. as it enters the cement. The passage of hot material through the limited quantity of cement will tend to raise the temperature of the cement in the tank with two detrimental results: (1) the increased temperature of the cement will cause excessive evaporation of solvent and a subsequently higher operating expense than is justified; and (2) the accelerated evaporation of solvent within the tank will tend to change the viscosity of the cement over a shorter period of operation, requiring unnecessary attention to viscosity control.

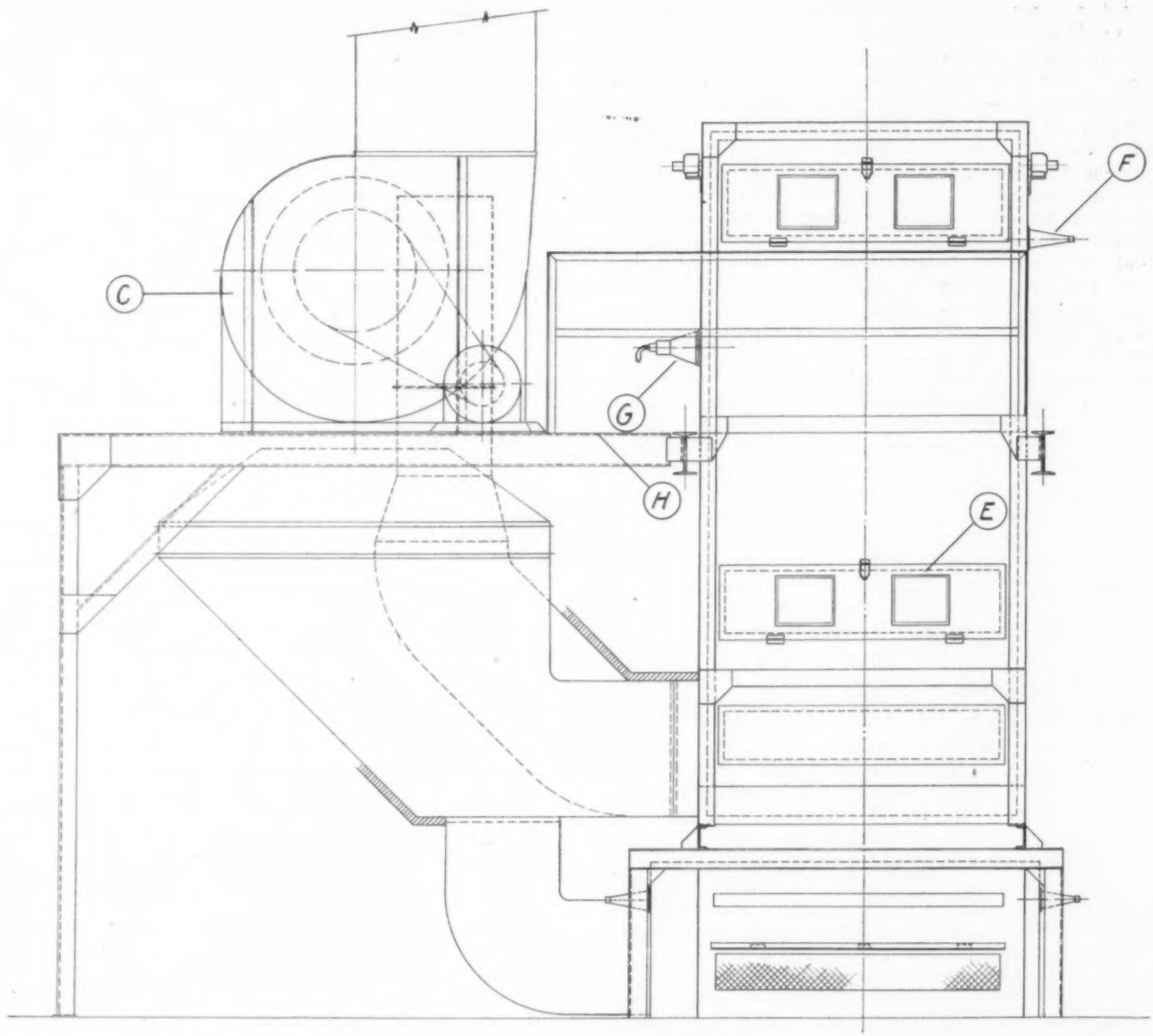

FIG. 2—Front elevational view showing the heating and exhaust equipment looking at unit from entering side.

C—Main conditional exhaust heating system; E—Glass light inspection doors; F—Fire control equipment; G—Interior lighting; H—Service platforms.

Cement Handling

No mention has been made of equipment for controlling the level of cement in the dip tank. However, whether it is to be float or pump feed, the function should be adequately interlocked with the balance of the system for safe operation. This interlock is so arranged that failure of the exhaust system, shutdown of the calender, or release of the fire protection system will prevent the addition of cement to the dip tank. Dipping equipment with the described safeguards is compact and will occupy only a few feet of space in the calender train. Suitable circulation equipment and pumps are provided to prevent sedimentation and depositation of the rubber on the piping system. If required, and where conditions permit, this circulating and feed system can be tied to the cement house.

The Dryer Proper

After the fabric is coated and surplus cement removed at the scraper bars, it leaves the dip tank enclosure through the narrow opening, as indicated in Fig. 1, and enters the vertical drying tower. A short air gap is provided between the dip tank enclosure and the tower. This air gap serves to keep the air handling system in the tower separated from the ventilation system of the dip tank. As both the opening in the dip tank and the lower end of the tower are placed under a definite suction, room air is inspirated into both units over the fabric at relatively high velocities. This eliminates the danger of vapor leaks into the room.

To best explain the function of the tower and the air handling system, it is necessary to describe the design and its function and then return to an explanation of the air gap mentioned above. Briefly, the tower consists of two parallel vertical baffled chambers in a common insulated enclosure. The term "baffled chamber" refers to the confined cross-section area of the passage through which the material moves. The tower forms an inverted "U" shape with idler rolls at the top to change the direction of stock travel 180°.

The exit end of the unit has a duct ring with a series of adjustable streamlined damper openings, on both sides of the fabric. The damper openings are so designed that they direct air upward into the tower counterflow to the fabric travel. An inspirator effect which tends to draw room air into the system prevents the escape of vapors and also adds to the volume of air handled through the system. Heated air is supplied to the pressure duct by a controlled fan type heating system as indicated in Fig. 2.

At the entering end of the tower, a similar duct ring is employed. This duct is connected to an exhaust fan system. The damper openings in the suction duct are designed to pull air through the work zone from the supply fan and also to inspirate air from the room through the entrance slot. As mentioned previously, there is a short air gap between the dip unit and the tower. The air intake at the tower together with the intake of the dip unit is sufficient to place the entire air gap under suction.

The system as described takes full advantage of the air in that high velocity is maintained over the fabric through the full length of the tower. This high velocity tends to effect maximum air turbulent contact with the material as it passes through, thereby assuring maximum pick-up of vapors from the surface of the material.

The exhaust system of the dip unit and that of the tower are connected into a common duct with provision for adjusting each independently. The common duct is advisable especially if solvent recovery equipment is to be used.

Control System

In the interest of safety, all mechanical equipment, including fans, rolls, dip tank elevating mechanism, etc., is of non-sparking construction and complete electrical grounding is necessary. All motors and control are explosion-proof. Additional protection is provided by electrical and airflow interlocks on the fans with the calender. Should fan failure occur due to mechanical or electrical difficulties, the calender immediately stops. Before the calender can again be started, a delay interlock is provided to compel a definite purging period in the dip unit and tower. The delay is connected in series with the fan circuit and also through flow switches in the exhaust duct so that all fans must be in operation and air must be in motion through the exhaust system before the purging period starts.

If for any reason air does not pass through the exhaust duct, indicating normal exhaust, it will be impossible to start the calender. Only when the "ventilating" or air handling equipment has been returned to operation, and the purging period (with the ventilation system functioning during the full time) has been completed, will it be possible to start the calender.

In addition to static collectors ahead of the dip unit and in the tower itself, it is advisable that similar collector units be incorporated at the cooling drums. It is doubtful whether sufficient solvent will remain in the material when it reaches the cooling drums to create a hazard at this point. However, it is advisable to install static collectors at the drums and wind-up as an extra precaution.

A further measure is incorporated to reduce the hazard of static sparking. The humidity throughout the system is to be maintained from 40% to 70% relative at operating temperature. This is accomplished by the introduction of humidifying steam in the supply air and control is maintained by a suitable wet and dry bulb humidity controller. Static discharges are reduced proportionately in a humidified atmosphere and therefore the combination of static collectors and humidity control provides maximum protection.

It will be noted in Fig. 2 that an air heating unit is incorporated in the air supply system to raise the temperature of the intake air. Actually, the solvent will evaporate rapidly at room temperature, but in order to further accelerate evaporation and achieve maximum drying within the tower it is advisable to increase the temperature of the air in the system. Air heating equipment is furnished because the rate of solvent evaporation increases in proportion to higher operating temperature by offering a greater differential of vapor pressure thereby permitting a substantial reduction in size of equipment required. Logically with reduction in tower size and the increase in evaporating efficiency in the tower, the hazardous zone is reduced and localized. Moderate temperatures do not deleteriously affect the quality of the fabric.

Determination of the air volume and operating temperatures through the system is based on several

factors. In the first place, there is a minimum volume of air which is introduced to safely dilute the solvent vapors to a point below the lower explosive limit. Calculations indicate that a fabric speed of 40 to 50 yards per minute on 60-inch nominal fabric consumes approximately 1.4 to 1.8 gallons of cement per minute of which varying percentages of cement up to 90% are solvent. Based on these conditions, a theoretical minimum of 10,000 cubic feet of air per minute is established as an absolute minimum to render the resultant mixture non-explosive in the equipment, that is at 25% of lower explosive limit concentration.

On the other hand, there is a practical limit to the amount of air which should be handled if solvent recovery is to be considered. The design shown can be made to handle sufficient volumes of air above the theoretical minimum to allow ample factor of safety without exceeding the permissible amount for efficient solvent recovery.

Solvent recovery is a separate phase and consideration should be given to it in view of the quantities of solvent which are involved over a long period of operation. Cost of solvent quantities used and cost of recovery equipment must be carefully balanced. Proper safety interlocks should be used to provide a purging period and also to prevent operation of the cementing unit when the recovery system is not in operation.

In existing calender trains, accessibility is obtained by making the dip tank assembly easily removable through a removable door (when in a lowered position). Access to the tower for threading and inspection is accomplished by means of gasketed door openings at the top. To facilitate inspection, these doors are equipped with double glass inspection windows, accessible from walkways at the tower.

The heating equipment and exhaust equipment are usually mounted on a floor supported or ceiling hung platform, custom built to clear interferences with feed conveyors and most building conditions.

Another important consideration in the actual installation of a post calender dipping unit is the problem of handling the exhaust air from the exhaust fan unit to a point outside the building and thence into the atmosphere.

Part of this difficulty comes from the operation of the tower system at a high relative humidity which naturally raises the dew point of the exhaust air. After the air containing the humidifying moisture and solvent vapor leaves the tower, it drops in temperature. This air, because of its saturated condition both from the point of moisture vapor and solvent vapor, has a high dew point. Depending on the amount of saturation caused by induced humidifying vapors, the dew point runs in the neighborhood of 100° to 130° F.

With gasoline as the basic solvent, its dew point under the conditions that have already been investigated runs in the neighborhood of 10° to 40° F. This is based on a solvent molecular weight of 100 which brings the vapor pressure characteristics of this solvent somewhere within the saturation temperature of heptane and octane.

In warm climates, the danger of solvent condensation under most conditions is negligible due to the low saturation temperature. However, in colder climates this condensation becomes a problem. To prevent condensation it is advisable in some cases to heat the air as it leaves the unit to a point considerably above the dew point of the moisture. This automatically assures no condensation of the solvents.

If the unit is installed in a low building, the discharge stack may be directly above the unit with the discharge close to the roof line. This condition should be investigated to determine the exhaust air temperatures in the stack and provisions must be made so that neither the

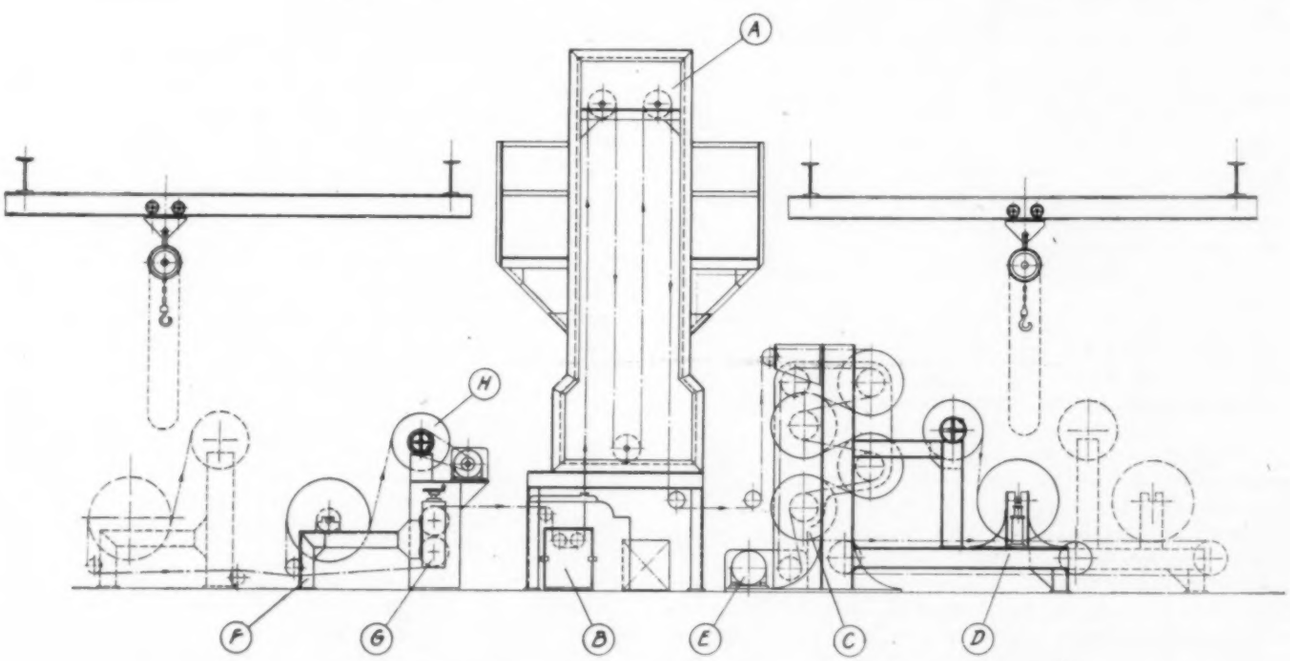

FIG. 3—View of cementing unit designed as a complete separate system.

A—Solvent evaporator tower; B—Cement dipper or applicator; C—Cooling drums (if required); D—Single roll or continuous wind-up; E—Main fabric drive—variable speed, remote control; F—Tension unwind stand—single roll or continuous; G—Torque control rolls; H—Torque control liner wind-up. Note: Heating and conditioning equipment not shown.

moisture nor the solvent condenses. Taller buildings present greater problems.

In warm climates, this possibility of condensate in the stacks does not present the problems it does in colder climates. For example, in climates where lower temperatures exist, the installation requires the heating of the exhaust air to approximately 150° F. and the complete insulation of the stack to maintain this temperature as close as possible. In the warmer climates where the possibility of low temperatures does not exist it is necessary that the exhaust air be heated, but it may not be necessary to insulate the exhaust stack.

These cases have been shown merely to illustrate the care and engineering consideration that must be given the design of an exhaust unit and the exhaust stack to assure safe and dry removal of both moisture and solvent vapors from the system. Each individual operating condition must be investigated to determine the dew point of the water vapor and of the solvent vapor. Once these actual conditions are known the exhaust stack may be heated and insulated or not, as the case may be.

In certain cases solvent recovery systems of the condensing or absorbing type may be installed. If this is the case, the same stack conditions should be investigated and the stack or duct to the recovery system be provided to suit these actual conditions, along the same general lines as indicated above. Only in this manner can a safe and efficient system be provided.

Several cases have occurred where space conditions for production requirements on specialized types of fabric, especially for mechanical goods use, did not indicate that a high speed unit should be located in the calender train. In several of these cases the cementing unit has been designed as a separate system complete with its own single or continuous pay-off stand, tensioning devices, cementing unit, cooling drums and fabric wind-up units. An installation of this general type is shown in complete elevation in Fig. 3.

Although the cementing of tire fabrics is a relatively new process, the designs and equipment as described herein present a carefully engineered solution to perform the operation safely and efficiently. The facts and designs described are based on installations in operation on woven and weftless tire fabric and on mechanical goods stocks, and all these installations have been carefully field checked for explosive concentrations and hazards.

Status of Wire-Cord Tire Development

FOR some time it has been known that research on the use of wire-cord to replace textiles in automotive tires is being conducted by several rubber companies. Sufficient progress has been made to prompt some technologists to forecast some post-war development in this field, although high comparative costs seem likely to prevent any widespread use. Some interesting comments on the development were contained in a recent issue of *Textile World*, as follows:

The principle of wire-cord tires is not new, having been pioneered in France by Michelin tire engineers more than a decade ago. A few of these tires were sold in the United States, but they were never widely adopted. Recent improvements in rubber-to-metal adhesives, however, has given the method fresh impetus. Wartime rubber problems spurred intensive experiments with wire-cord tires in the hope that they might produce a lighter tire with great bursting strength, and bring a saving in rubber and tire-building equipment.

Conclusions from fabrication and testing experience are still shrouded in censorship, but it is apparent that not all of the hoped-for results were obtained. They were, however, impressive enough to cause designers to predict future application in limited fields.

Vehicles such as those used in logging operations, where tires encounter high pressures and low speeds, are considered a typical possibility for wire-cord tires. Indications are that such uses would comprise but a small fraction of the country's tire output. For ordinary passenger- and commercial-car use, the wire-tire cost is so high, as compared with textiles, that three or four times longer service would be required to make them economically practicable. Wire has produced no such promise.

All of the major Akron companies have built tires with metal. Details of construction vary, but in general they have employed steel wire of about .006 inches in thickness, twisted into a three-by-seven-strand cable. This is coated with brass, high in zinc, to prevent corrosion and because that alloy has been found to form the strongest bond with rubber. A close layer of wire cable is wound around a rubber core over a cylindrical drum, then embedded with a second layer of rubber. A tire-ply is then bias-cut from this sheet, with the transverse wires at an angle of about 45°. Designers say that two such plies impart a bursting strength equal to about six fabric plies.

Among the speculative possibilities of the wire-cord tires were their use on aircraft, where weight is an important factor. It is understood, however, that tests were unsatisfactory because the high degree of flexing—up to 35%—to which the tire is subjected by landing shock, further decreased the low fatigue-life which is the wire tire's major disadvantage as compared with those built with textiles.

Another urge behind the wire-cord experiments was the possibility that their use in heavy-duty truck and bus tires would overcome the problem of internal heat which causes such tires, when built of synthetic rubber, to deteriorate rapidly. Tire engineers consider 250° F. the critical temperature for fabrics, while for rubber it is 300 to 350° F. Again, however, low fatigue-life was the insurmountable handicap of the wire tire. The new glass fabrics were also tested hopefully in this connection. Their resistance to heat, of course, was all that could be desired, and they had ample tensile strength; but inelasticity caused their rejection.

Obviously, wire-working machinery has not been available for any large-scale building of wire tires, even had experience made this procedure seem desirable. It is possible, of course, that reduction in the cost of fine-drawn wire might shift the economic balance between wire and fabric tires. But until it does, rubber technicians are agreed that the wire tires cannot compete, and will remain of limited application and experimental interest.

Report on the Early Development of American Synthetic Rubber

By DR. LUCAS P. KYRIDES

Director of Research, Organic Chemicals Div., Monsanto Chemical Co., St. Louis, Mo.

The first Midwest Award of the St. Louis Section of the American Chemical Society was presented to Dr. Kyrides, a pioneer in the development of synthetic rubber substitutes in the United States, on March 5, 1945. The award consists of a gold medallion given annually to the outstanding chemist of nine midwestern states. In accepting the award, Dr. Kyrides delivered an address on "The Chemist and the Millenium of Well Being." This article is an abstract from that address.—Editor.

During the first decade of the present century, considerable effort was made to coordinate engineering knowledge, and in 1909, the year of my graduation (from the University of Michigan), the first volume of *Industrial and Engineering Chemistry* made its appearance. Baekeland contributed a paper to this volume on the "Synthesis, Constitution and Uses of Bakelite" and lamented elsewhere "the misfortunes of the poor inventors who fell prey to a legalized system of piracy as carried out by infringers, helped by the tricks of lawyers."

In this same volume one finds an analysis of the Badische Anilin and Soda Fabrik, whose preeminent position in chemical industry was conceded and envied. This company, early in its history, grasped the far-reaching possibilities of synthetic chemistry, and basing its efforts on coal tar had begun the manufacture of alizarin in 1869 and indigo in 1897, the latter after laborious and very costly developmental work. These dyestuffs up to those years had been obtained from madder and indigo trees, cultivated respectively in France and Asia Minor, and India. This synthetic revolution destroyed the livelihood of significant portions of the agricultural populations of these countries and forced them to seek new fields of endeavor.

First Manufacture of Saccharin

That America was not prepared to capitalize on its discoveries is exemplified by the following incident: The inordinate sweetness of saccharin was discovered by a German student in the laboratory of Remsen at Johns Hopkins University in 1879, and by 1886 the discoverer was operating a plant for its production in Germany, but it was not until 1902 that a nontechnical but far-sighted St. Louisan, John F. Queeny, undertook the manufacture of the product in this country.

The early efforts in synthetic activities were under constant pressure from the German monopolies, and price reduction to below cost played havoc with the maturing of the early chemical enterprises. It took not only vision but extraordinary tenacity to withstand the economic pressure of the foreign organizations and all honor is due to those who did not lose courage. Not only did pioneering industrialists need courage in that day, but also the chemists who worked with them.

At the time of my graduation, an organic chemist was often mistaken for a pharmacist and the only industrial opening available to me was with a tobacco firm of St. Louis. The position, however, did not materialize when it was found that I was a non-smoker. This left me with the choice of some phase of teaching, and since the opportunity at Urbana promised a research position it was accepted with alacrity. My first impression of the contact is still quite vivid. The president invited the neophytes to tea at whose conclusion we were admonished on our social responsibilities, the most important being that smoking on the campus was prohibited out of deference to the fair sex, whose olfactory nerves, it appears, had not matured for the enjoyment of the weed. How times have changed in a decade or two!

Germans Began Fundamental Study

Sojourn at those halls of learning did not last beyond the termination of the academic year. The surrounding country with its monotony and knee-deep mud was too depressing for one who spent his childhood at the foot of the Homeric Olympus in sight of Troy, so I left only to find that one could not live on scenic beauty alone any more than one can on love alone!

Since it had been my intention to return eventually to my native land (Turkey) I took an apprenticeship for a short time in soapmaking, but with the impending Balkan Wars in sight, it was time to look for a more permanent position. About this time the Germans had begun the fundamental study of the structure of the rubber molecule and reported on the tendency of certain types of unsaturated hydrocarbons to condense to elastic substances. While these studies were in progress, the price of rubber had gradually risen to prohibitive levels, selling as high as 30 marks a kilo (approximately $4 a pound). It was not obvious at the time, but clear in retrospect, that the rise was due to hoarding in anticipation of the impending war.

In 1860, Williams had isolated a low-boiling hydrocarbon, later known as isoprene, from the products of the destructive distillation of rubber. In 1875 Bouchardat reported that this material could be changed into rubber by the action of hydrogen chloride and stated that he considered it the mother-substance of rubber. This hydrocarbon was identified as 2-methylbutadiene by Tilden in 1882, who also reported that ten years

afterwards he found that the liquid had solidified to a rubber-like substance, but that he had been unable to duplicate that observation.

Research Work at Hood Rubber

At the time research was begun at the Hood Rubber Company in 1911, the price of rubber had risen in this country to $1.25. The company, deriving some measure of confidence from the sketchy disclosures of the work being done abroad, considered the feasibility of synthetic rubber. Lacking in experience and unable to appreciate the tremendous difficulties confronting such a project, two of us undertook the responsibility of initiating research. We were given all the equipment needed and were encouraged in every possible way! However, little did the company realize the implications of the project in dollars nor was consideration given to the necessity of utilizing the experience of others than organic chemists for the success of the project. Had this been realized, it is doubtful that they would have financed even the initial work.

It should be stressed that the processes known for the synthesis of the butadiene hydrocarbons were not advanced to a point for their industrial utilization. The modern methods for dehydrogenation were not developed, nor was the oil industry chemically minded at the time. Neither did we have a look into the foreign processes as was had during the present emergency.

Following a preliminary survey of the problem, the study of isoprene was abandoned in favor of butadiene, the first member of the series, as it appeared that the latter would be more simple to prepare and that the observations made in its synthesis might be applicable to the rest of the series. These hopes were based on the articles of Sabatier and Senderens on the dehydration of alcohols to simple olefines.

It was known that acetaldehyde would condense to acetaldol but the yields were poor and the process messy. By careful study of the conditions of aldolization, it was possible to improve the yields to near the theoretical if one took into consideration the unreacted acetaldehyde. As a side issue to this problem, improvements were made in the dehydration of acetaldol to crotonaldehyde, which by the ease of its hydrogenation indicated that both butyraldehyde and butanol could be produced fairly simply and in good yields.

The next step involved the reduction of acetaldol to 1,3-butanediol and this was accomplished electrolytically either in acid or neutral solutions to give encouraging yields.

The third step was puzzling. The work of the French scientists related to the dehydration of alcohols to olefines in the vapor phase over aluminum oxide. It was assumed before actual experimentation was begun that by analogy to alcohols, glycols, such as butanediol, if subjected to the same treatment would give diolefines. However, search of the literature disclosed that under these conditions glycols were said to give aldehydes or ketones by partial dehydration and rearrangement. Despite this discouraging statement the idea looked sufficiently attractive to ignore the written word and try the experiment. The trial was successful and butanediol gave butadiene in fair yield.

Subsequently, by carrying out the dehydration under diminished pressure, in order to minimize by-product formation, the yield was increased and the quality of the hydrocarbon improved to such an extent that it would polymerize easily to rubber.

The outcome of this experiment was of considerable influence for future investigations in making it clear that although the written word is to be used as a guide it should never be taken as infallible. The known being a very small proportion of the unknown, it behooves us to subject a worth while idea to experiment before abandoning it.

In the course of these investigations, it gradually became clear that the production of the next higher homologue of isoprene, 2,3-dimethylbutadiene, would be cheapest to manufacture. The reduction of acetone to pinacol by means of magnesium amalgam had been described. This process by dehydration gives the desired diolefine. Investigation of the synthesis bore out the hopes, and a process was developed for the dehydration under atmospheric conditions by the use of traces of strong acids, which gave a high yield of pure 2,3-dimethylbutadiene which could be easily polymerized. At this stage of the investigation information came to us from Germany that they also were working along the same lines, but we continued our work.

We prepared a sufficient quantity of dimethylbutadiene, polymerized and supplied it to the tire division of the Hood Rubber Company, who followed their standard processes of making tires from natural rubber. These tires lacked the desired degree of elasticity, were harder, and possessed a leathery characteristic. Later we learned that the Germans had also observed the same characteristics of this rubber, but for military reasons operated a factory for the daily production of ten tons during the war.

The experience we gained during the course of this work of ours made possible the synthesis of isoprene. The best procedure involved the preparation of dimethyl vinyl carbinol by reaction of methyl magnesium bromide with methylene acetone (vinyl methyl ketone). The dehydration of the carbinol with traces of strong acids gave isoprene. The polymerization of the hydrocarbon following precipitation proceeded smoothly to give a material simulating the properties of natural rubber. In the course of the investigation it was also observed that only diolefines which contained two terminal methylene groups polymerized to rubber-like products, the others such as 1,3-pentadiene polymerized to oils.

The work, before the declaration of the war in Europe, had progressed sufficiently to convince us that it would be impossible to commercialize any one of the processes and recommendation was made that the company discontinue this investigation. The simultaneous reduction in price of natural rubber had also a dampening effect on continued research.

Pooling of Scientific Resources

At that time aliphatic chemistry was still an orphan and simple methods for many obvious reactions had not been worked out. Copolymerization techniques for improving the properties of synthetic rubber had not been considered. It is doubtful that any one company or a combination of companies would have underwritten the present synthetic rubber program in the face of the price threat from the natural product.

In 1942 it was only by the pooling of all the scientific and industrial resources of this country, supplemented by the know-how from foreign sources, and government subsidies, that the project has been made to succeed. We had grown more technologically and industrially wise since 1918.

Dioctyl Sebacate

Low-Temperature Plasticizer for Polyvinyl Chloride

ONE of the most serious problems encountered in the use of plasticizers which impart extremely low temperature flexibility to polyvinyl chloride and its copolymers is the volatility of such softeners. This phenomenon is especially noticeable in thin, free films which stiffen with age. During the past year, in the laboratory of the Resinous Products & Chemical Company, a liquid ester type plasticizer has been developed which imparts the low temperature flexibility associated with dibutyl sebacate and which possesses the non-volatility characteristics obtained with dicapryl phthalate or dibenzyl sebacate.

This new plasticizer, dioctyl sebacate, is a high boiling, stable, light-colored ester of sebacic acid and is liquid at ordinary temperatures. Its physical properties follow:

Color	Colorless to very pale amber
Odor	Faint, ethereal
Boiling Point	256° C. at 5 mm.
Freezing Point	—48° C.
Acid Number	0.20 max.
Sp. Gr. - 60° F./60	.917
Lbs. per Gallon	7.6
Viscosity at 100° F.	.115 poises
Refractive Index at 20° C.	1.4496
Saponification No.	260
Flash Point	415° F.
Fire Point	495° F.

Dioctyl sebacate imparts a bend-brittle point of below —70° C. (minus 94° F.) to a compound of the following formulation:

Polyvinyl chloride (95%), acetate (5%) copolymer	63.5 parts
Lead Carbonate	1.0 parts
Stearic Acid	0.5 parts
Dioctyl Sebacate	35.0 parts

The bend-brittle point is determined by storing strips of the stock .080 inches thick at —30° C. for 24 hours. These specimens are then immersed in a methanol dry ice bath, held at the test temperature for five minutes, then rapidly flexed through a 90° bend over a 3/8 inch mandrel. Tests are repeated at decrements of 5° C. until the specimen cracks. The bend-brittle point is the temperature 5° C. above the cracking point.

A comparison of the properties of the test stock of those of a similar compound plasticized with the same amounts of dibutyl sebacate and dioctyl phthalate appears in Table I.

A review of the values shows that the plasticizing efficiency (100% modulus) of dioctyl sebacate is intermediate between that of dibutyl sebacate and dioctyl phthalate. The stock containing the dioctyl sebacate, like the dibutyl sebacate stock, possessed a bend-brittle point below —70° C. as compared to —50° C. for dioctyl phthalate. (The exact bend-brittle point was not determined for the two sebacate plasticizers because temperatures lower than —70°C. could not be obtained under the conditions of test.)

Note: This article is based on data furnished by the Resinous Products & Chemical Co., Philadelphia, Penna.

TABLE I—COMPARISON OF PROPERTIES OF POLYVINYL CHLORIDE STOCKS PLASTICIZED WITH DIBUTYL SEBACATE, DIOCTYL SEBACATE AND DIOCYTL PHTHALATE

Plasticizer	*Dibutyl Sebacate*	*Dioctyl Sebacate*	*Dioctyl Phthalate*
100° modulus (psi)	540	840	1110
Bend-brittle point °C.	<—70	<—70	—50
Volatility (% weight change 10 days at 60° C.)	—9.8	< 0.1	< 0.1
Heat Stability Hours at 150° C.	5	5	3.5
Flammability			
% burned	100	100	100
Time—seconds	17	20.5	19.1
Extraction (% weight change)			
Water	—0.3	< —0.1	< —0.1
Mineral Oil	—24.6	—22.5	—8.4

A study of the volatility of films 0.01 inch thick under conditions of vigorous air circulation at 60° C. indicates that dioctyl sebacate is essentially non-volatile and appreciably superior to dioctyl phthalate in this characteristic. Furthermore, this new plasticizer possesses excellent chemical stability at higher temperatures. Under dry heat aging at 150° C., the dioctyl sebacate stock did not discolor significantly until after 5 hours, whereas, under the same conditions, the dioctyl phthalate stock discolored after 3.5 hours.

For all practical purposes, dioctyl sebacate is not susceptible to extraction by water. On the other hand, like almost all other monomeric ester types, it is not resistant to oils, and polyvinyl chloride films containing it exhibit low flammability resistance. The good electrical properties of dioctyl sebacate make it particularly useful for insulating compositions.

Thus, in addition to its ability to impart extremely low temperature flexibility to polyvinyl chloride, dioctyl sebacate exhibits extremely low volatility, excellent water resistance, and good heat stability.

The combination of high plasticizing efficiency, low volatility and water resistance possessed by dioctyl sebacate may be utilized to advantage in the manufacture of polyvinyl chloride strip coatings and free films, particularly those used as protective wrapping for ordnance materials subject to climatic variations and temperature extremes. The ability of this stable plasticizer to impart extreme low temperature flexibility is of significance in materials such as electrical insulation jackets where low temperature performance is of primary importance.

Other applications wherein the properties of dioctyl sebacate may be used to good advantage are coated fabrics, shower curtains and rainwear which must resist water and show satisfactory flexibility upon aging.

Dynamometer Tests Tires and Brakes at Wright Field

DESIGNED and built on special order for the Army Air Forces by the Adamson Machine Co., now the Adamson United Co., of Akron, Ohio, a gigantic airplane tire and brake tester, called a Dynamometer, was recently installed in one of the testing laboratories at Wright Field, Ohio. The Dynamometer, which has a total weight of more than 250 tons and took more than a year and a half to construct and install, simulates a heavy bomber dropping onto a landing field at two miles a minute speed, meeting the ground with a force of more than 200 million foot pounds of motive energy. Most of the electrical equipment used to operate the gigantic device was built by the Westinghouse Electric & Manufacturing Company, of East Pittsburgh, Penna.

Operation of Inertia Wheel

The heart of the Dynamometer is a 158-ton wheel, called an inertia wheel because of its resistance to change. On the front and rear of the wheel is a mounting axle for an airplane wheel, so connected with compressed air cylinders that each can be smashed into the inertia wheel with terrific force. Outside the caged chamber in which the tests are conducted a large amount of electrical equipment, especially adapted to the Dynamometer, goads the inertia of the immense wheel and sets it spinning at its terrific pace. Directly driving the axle on which the wheel is mounted is a 400 h.p. direct current motor. For 30 minutes it pulls to get the circular mass moving at a speed of 308 revolutions per minute. At this speed, it is estimated, the wheel, if freed from its moorings, would crash right through the steel-and-brick structure which houses it.

The tire and brake testing machine was designed as a highly accurate simulation of airplane landing conditions. Surface speed of the huge inertia wheel duplicates effectively the forward speed of the airplane as it comes in for a landing. The force with which the tire and braking wheel are smashed against the inertia wheel accurately approximates the drop of a landing airplane. But the simulation on the tester is projected into the future, for the test on tires and brakes is decidedly more severe than tests under actual landing conditions.

Under the concrete floor of the Aircraft Laboratory which supports the inertia wheel, a labyrinth of tunnels carries wires, oil pipes and air lines. The 8-ton steel shaft which carries the inertia wheel was forged with the utmost care, X-rayed for any possible flaws, and given a long series of tests by Adamson metallurgists. The specially-designed electrical equipment surrounds the caged Dynamometer. Alternating current operates a 450 h.p. motor driving a 300 kilowatt generator which changes alternating to direct current to operate the 400 h.p. motor connected with the shaft of the inertia wheel.

Behind this operation, a Rot-o-trol, sometimes called an "electric diagnostician," determines power needs for continuous acceleration and regulates the electrical drive so as to provide a constant accelerating force. The Rot-o-trol also can be used for regenerative braking, a process in which motors are connected to become generators acting to retard the speed of the inertia wheel. It also automatically keeps voltages in the motor and generator the same so that power, once cut off, can be connected back again while the inertia wheel is still in motion. Large panels of switchgear give operating engineers fingertip control of the entire equipment. Other panels, built by Adamson, show engineers the ability of the brake to stop the bomber and the tire to withstand wear and tear.

Use of Earlier Dynamometers

Smaller dynamometers once tested airplane tires and brakes successfully. That was before the war brought heavier and swifter behemoths of the air. Adamson's first tire and brake tester machine, for example, had an inertia wheel only 66 inches in diameter. Later, as airplane tire size increased, another was built with an inertia wheel 10 feet in diameter. The new one at Wright Field has a 16-foot inertia wheel, capable of testing tires and brake wheels even larger than those in common usage today.

Hard Synthetic Rubber Stocks with Durez Phenolic Resin

A NEW type Durez thermosetting phenolic resin has been developed by Durez Plastics & Chemicals, Inc., North Tonawanda, N. Y., which is said to possess the useful characteristic of softening synthetic rubber during the milling or processing of semi-hard and hard rubber compounds. To date the use of the new resin has been confined to Buna S and Buna N stocks, but it is reported that it is also compatible with neoprene and with natural rubber. Being thermosetting and completely compatible with the synthetics, the new Durez resin reinforces the rubber in much the same manner as carbon black, producing stocks of high tensile, with a high degree of hardness, good elongation, and low-temperature flexibility.

For example, a Buna N stock having 50 parts of Durez resin on 100 parts of rubber, and normal sulfur and accelerator content, gives a vulcanizate with a hardness of 92, tensile of 2600, and an elongation of 300%. Furthermore, according to Durez Plastics, the vulcanizate passes the A.S.T.M. freeze test easily without breaking. A smaller percentage of the resin can be used to soften the compound on the mill and carbon black added in sufficient quantity to secure the required hardness. Hard rubber stocks made by this method are reported to machine readily. The new resin, being inherently unaffected by oxygen, also imparts antioxidant properties to the compound.

Abstracts of United States Patents on the Compounding and Use of Synthetic Rubber

By FREDERICK MARCHIONNA, M. S. Chem.

Part XVI

MacDonald—U. S. Pat. 2,328,351—Aug. 31, 1943. *Deodorized Polychloroprene Cements.* (Assigned to B. B. Chemical Co., Boston, Mass.).

A deodorized polychloroprene in the form of a solution cement is obtained by dissolving the polychloroprene in an organic solvent and adding thereto from 1 to 10% of an ammonium or alkali metal salt of an inorganic acid containing sulfur or phosphorus and oxygen. Such salts include sodium, potassium, or ammonium sulfates, bisulfates, sulfites, thiosulfates, hydrosulfites, metasulfites, sulfanilates, monophosphates, phosphites, formates, acetates, stearates, etc. The polychloroprene, deodorized as described in U. S. Pat. 2,067,854, is dissolved in toluol, using 2 pounds of polychloroprene for each gallon of toluol, and 3% or more of any of the above salts, thus obtaining non-gelling cements, which when stored at 105° F. for over eight weeks do not show any thickening or gelling.

MacDonald—U. S. Pat. 2,328,352—Aug. 31, 1943. *Deodorized Polychloroprene Cements.* (Assigned to B. B. Chemical Co., Boston, Mass.).

A division of U. S. Pat. 2,328,351 covering the production of non-gelling polychloroprene cements, this patent has the same disclosure but claims the use of the alkali metal salts of formic or acetic acid. Thus, sodium formate or acetate in quantities up to 3% is added to the polychloroprene, which has been deodorized as described in U. S. Pats. 2,067,854 and 2,107,796, preferably in the form of powder, and the mixture then dissolved in benzene, toluene, trichlorethylene, Solvesso, etc., with or without a quantity of non-solvent, such as ethyl acetate, naphtha, etc. The alkali salts may be added (from 1 to 10%) to a solution of the polychloroprene to form viscous cements which will not gel over a long period when kept at temperatures above 100° F.

Baty and Meyer—U. S. Pat. 2,329,322—Sept. 14, 1943. *Microporous Rubber Products.* (Assigned to U. S. Rubber Co., New York, N. Y.).

In the production of microporous rubber products, in which silica gel is compounded with natural rubber or an interpolymer of butadiene with acrylic nitrile, a soft, friable and partly dehydrated silica hydrogel having a water content between 60% and 85% is milled with the polymeric plastic-elastic rubber and the mass then subjected to vulcanization, producing a microporous product of low density. The particular silica gel is obtained by reacting sodium silicate with sulfuric acid and drying the resultant precipitate to a water content of 60% or more to recover a non-slippery, semi-fluid gelatinous mass in freely flowing state which will not swell in water but will have the capacity of losing water and will shrink on drying. In an example, 100 parts of rubber or an interpolymer of butadiene with acrylic nitrile are milled with 275 to 475 parts of this silica gel containing 77% to 84% of water to form an aqueous pasty mass in which there are incorporated 30 parts of hard rubber dust, 45 parts of sulfur, 4 parts of diphenyl guanidine and 30 parts of wood flour. The homogeneous mass is calendered into a sheet; a clay mold is placed over the sheet and subjected to vulcanization in hot water or saturated steam, thus obtaining a microporous sheet of low density which may be used as a battery separator. The porosity of the microporous material may be increased by treatment in a boiling 10% aqueous solution of sodium hydroxide for about 15 minutes.

Henderson—U. S. Pat. 2,330,353—Sept. 28, 1943. *Polymeric Butadiene Products.* (Assigned to B. F. Goodrich Co., Akron, Ohio.).

A resilient product, which is highly resistant to oils, consists of a polyvinyl chloride, preferably gamma-polyvinyl chloride, and an interpolymer of butadiene with acrylic nitrile, the latter being preferably obtained from the emulsion polymerization of 40 to 70% butadiene and 60 to 30% acrylic nitrile. The composition may contain from 10 to 70 parts of polyvinyl chloride and 90 to 30 parts of butadiene interpolymer. In one example, the product comprises a uniform mass of equal parts of polyvinyl chloride and 55:45 butadiene-acrylic nitrile interpolymer, which can be extruded or molded into flexible and tough oil-resistant articles. In another example, 100 parts of a 75:25 butadiene-acrylic nitrile interpolymer are compounded with 65 parts of channel black, 25 parts of dibutyl phthalate, 5 parts of zinc oxide, 1.5 parts of cottonseed fatty acid, 1 part of phenyl betanaphthylamine, 1.5 parts of sulfur, and 1.5 parts of dimethyl mercaptothiazole. This mixture is then combined with 20 parts from a composition consisting of 100 parts of polyvinyl chloride, 95 parts of tricresyl phosphate, and 2 parts of lead silicate as stabilizer. The composition is cured at 300° F. for ½ hour, thus obtaining a product which swells only 1.8% by volume when immersed in gasoline for 14 days, as compared with 12.6% swelling of the butadiene-acrylic nitrile interpolymer alone, and a shrinkage of 16% by the polyvinyl chloride composition. The mixture is flexible at —24.5° C., while the polyvinyl chloride alone loses its flexibility at —9.5° C.

Jayne—U. S. Pat. 2,330,366—Sept. 28, 1943. *Oil Tank Roof.* (Assigned to E. I. du Pont de Nemours & Co., Wilmington, Del.).

In a metal tank to be used for storing volatile liquids, such as gasoline, etc., the tank is provided with a floating roof cover which is oil-proof and gas impermeable and will, therefore, prevent escape of oil vapors. This floating roof may consist of two canvas fabrics impregnated with an oil-proof polychloroprene. These two fabrics are cut into the shape and size of the tank, set spaced apart, and the edges sealed with the polychloroprene so as to form a kind of cylindrical bag having the required thickness for a float of the type. The top of this bag is then provided with a polychloroprene tube. This structure is then introduced through the manhole of the oil

tank, and cork powder inserted through the tube to fill the space between the spaced fabrics with cork, thus obtaining a light, oil-proof, floating cover for the tank. After this bag cover is filled, the filling tube is closed with a wooden plug coated with polychloroprene. As the gasoline is pumped into the tank and rises therein, the floating roof will rise with and rest over the surface of the gasoline and, due to its flexible nature, will cover the entire oil surface.

Judson—U. S. Pat. 2,330,368—Sept. 28, 1943. *Antisqueak Brake.* (Assigned to B. F. Goodrich Co., Akron, Ohio).

A brake structure consists of the braking element which can be moved into engagement with the braking surface and an expansible element arranged to press the intervening braking element into sliding engagement with the braking surface. The expansible element is preferably from a heat-resistant elastic polymer, such as neoprene, Ameripol, etc. The face of this elastic polymer, which is to make contact with the braking element, is provided with a plurality of depressions, preferably of waffle-like form, to provide voids and thus accommodate for the distortion of the polymeric expansible element. The walls of these depressions provide a bulge area which is more than one-third the area of the contacting face, thereby promoting yieldability while preventing the development of squeaking sounds and effecting sliding engagement of the brake with the braking surface or drum of the brake.

Longman, Bank and Farr—U. S. Pat. 2,330,502—Sept. 28, 1943. *Plastic Packing.*

A packing, particularly adapted for packing of stuffing boxes to prevent leakage of air, steam, water, gases, etc., consists of a resilient filler, such as granulated cork, graphite, mica, metal powder, foliated glass, expanded vermiculite, and a binder from a polymer of isobutylene which may contain small amounts of butadiene interpolymerized therewith and which will flow when under pressure. Thus, the packing may comprise 350 parts of polyisobutylene having a molecular weight of 12,000, or a mixture of 250 parts of a polyisobutylene having a molecular weight of 50,000 and 100 parts of a polyisobutylene having a molecular weight of 3,000, together with 150 parts of cork granules, 50 parts of grease, and 150 parts of graphite; or the packing may consist of 50 parts of polyisobutylene having a molecular weight of 10,000, 20 parts of cork granules, 20 parts of graphite, 1 part of mica and 6 parts of petrolatum. These compositions are homogenized and extruded into cylinders of the desired diameter. The cylinders are wrapped with a fiber jacket and coated with a grease containing 37 parts of sodium stearate, 168 parts of a lubricating oil, 0.4 parts of sodium hydroxide, and about 8 parts of mica, with 0.8 parts of water. The grease can be applied also to the plastic core packing before being wrapped.

Mack—U. S. Pat. 2,330,504—Sept. 28, 1943. *Polybutene Dispersions.*

Polybutenes, such as isobutylene, which may have been polymerized in the presence of small quantities of butadiene, and may have a molecular weight above 27,000, are dispersed in water with the aid of casein without the use of conjunctive materials. For example, 665 parts of a polyisobutylene, having a molecular weight of about 50,000, is introduced in an internal mixer and kneaded for about 5 minutes. After adding 8 parts of borax and kneading for 10 more minutes, there are added gradually 54 parts of casein in 650 parts of water and the mixture worked in the mixer until the polyisobutylene is uniformly dispersed in the aqueous medium. The resulting dispersion should have a polybutene concentration greater than 50%, otherwise the polyisobutylene will have a tendency to cream. A small quantity of sodium pentachlorophenate may be added to the dispersion so as to prevent the casein from decomposition. This type of dispersion is particularly suitable for addition to natural latex or to latices from polymers of butadiene and interpolymers thereof with other polymerizable compounds to act as plasticizers thereof.

Fisher—U. S. Pat. 2,330,698—Sept. 28, 1943. *Compounded Butadiene Polymers.* (Assigned to Jasco, Inc., New York, N. Y.).

In the compounding of natural rubber, polymers of butadiene, isoprene or chloroprene, etc., with carbon black, it is possible to incorporate a much larger quantity of the black in the rubber by first making a masterbatch of the carbon black with a polyisobutylene having a molecular weight from 27,000 to 200,000 and then compounding the rubber or the polychloroprene, polybutadiene, etc., with this masterbatch by milling the required quantity of the treated carbon black with the polymer. Thus, from 5 to 60 parts of lamp black are kneaded with from 95 to 40 parts of a polyisobutylene having a molecular weight above 27,000; or 20% of carbon black, 40% of polyisobutylene, and 40% of paraffine wax are worked in an internal mixer so as to form a homogeneous mixture having a melting point of about 120° F.; or 30% of channel black, 50% of polyisobutylene having a molecular weight of 80,000, and 20% of paraffine wax are milled into a homogeneous mass to form the masterbatch. Any of these batches can then be incorporated in rubber, butadiene polymers, etc., in the required quantity. The carbon black may be incorporated in the isobutylene polymer before, during or after polymerization. It is believed that the incorporation of very large quantities of carbon blacks in butadiene polymers or rubber is made possible by the high wetting power of the polyisobutylene.

Chittick and Schlandt—U. S. Pat. 2,330,798—Oct. 5, 1943. *Mastic Products.* (Assigned to Pure Oil Co., Chicago, Ill.)

A light cracked hydrocarbon distillate containing diolefine compounds, such as the gasoline from petroleum oil cracked at 1000° to 1100° C. in the vapor phase, is passed through a gray tower packed with Fuller's earth to form a polymer having a viscosity from 200 to 300 Saybolt at 210° F. and an iodine number of about 200. When this viscous polymer is steam distilled to bring the solid content to 85%, and mixed with sulfur and a vegetable oil, it can be vulcanized into a rubber-like product. The relative quantities of polymer:sulfur:oil may be 5 to 2: 2 to 4: 3 to 4. The mixture may be vulcanized by heating from ½ to 3 hours at 140° to 160° C. This vulcanization may be accelerated by the addition of about 1% of a catalyst, such as sulfur chloride, phosphorus pentasulfide, etc. Fillers, such as saw dust, silica, whiting, slate dust, hair, asbestos, etc., may be incorporated in the mixture. In one example, the mastic product may comprise 60 parts of the polymer, 40 parts of sulfur and 40 parts of castor oil, which can be vulcanized at 162° C. for 2 hours; or 20 parts of the polymer may be mixed with 30 parts of sulfur and 50 parts of linseed oil, lard oil, sperm oil, soya bean or perilla oil, etc., and vulcanized at 143° to 155° C. for 1 hour.

Taylor and Jones—U. S. Pat. 2,331,007—Oct. 5, 1943. *Electric Detonators.* (Assigned to Imperial Chemical Industries, Ltd., London, England).

In the manufacture of electric detonators, the sealing thereof is effected by crimping the metal detonator tube onto a cured polychloroprene plug through which the electric conductor is passed into the interior of the detonator. A suitable mixture for this plug may consist of the following parts: polychloroprene (100), light magnesia (10), rosin (5), zinc oxide (10), Nonox S (2), chlorinated naphthalene (5), cotton seed oil (5), vulcanized rape seed oil (20), whiting (120), titanium oxide (10), and Vulcafor Yellon G.S. (3). This mixture may be extruded through a die having an internal diameter of 4.5 mm., with a tapering center pin to form a tube having an outer diameter of 5.2 to 5.5 mm. and a central orifice of 1.5 to 2 mm. The extruded tube is cured at 140° C. for 1 hour and then cut into lengths of about 8 mm. The leading insulated wires are then threaded through the central hold of the polychloroprene plug with the aid of a little talc and the fuzehead attached to the bare ends of these wires. The fuzehead and leading wires are waxed in a resin-wax bath kept at about 130° C. and the plug slipped over the waxed wire while the waxy mixture is still fluid. The plug is finally inserted to a suitable distance into the end of a fulminate-chlorate copper

detonator and crimped mechanically to pinch the walls of the detonator deeply into the plug to make a tight joint also with the crimped leading wires. This joint will be waterproof and heatproof. This detonator is particularly adapted for use in fiery mines and for submarine blasting.

Montgomery—U. S. Pat. 2,331,922—Oct. 19, 1943. *Coating Paper.* (Assigned to Champion Paper & Fibre Co., Hamilton, Ohio).

In a method of coating paper with a pigment suspension of clay, calcium carbonate, blanc fixe, etc., in an aqueous binder of starch, casein, etc., the pigment suspension is applied to the paper in a convenient manner. While this coating is still wet and highly plastic, it is smoothed out into a smooth glossy surface finish by passing it between two cylindrical surfaces, with the coated surface in contact with an oily liquid film on one of the cylindrical surfaces. This cylinder is preferably of metal which is heated from the interior while the pressure roll is preferably covered with an oil and heat-resistant rubber-like polymer, preferably polychloroprene, or an interpolymer of butadiene with acrylic nitrile. The oily liquid used for pressing the coated paper surface into a glossy finish is a deodorized kerosene or white oil, but tributyl phosphate, xylene, sulfonated vegetable oils, turpentine, monochlorobenzene, etc., may also be used. In one example, the oily liquid may consist of 4% of deodorized kerosene, 0.6% of tributyl phosphate, and 2.5% of zinc stearate, calculated on the weight of the coating material on the paper surface.

Henderson—U. S. Pat. 2,331,979—Oct. 19, 1943. *Plasticized Polybutadienes.* (Assigned to B. F. Goodrich Co., Akron, Ohio).

A coal tar is used as softener and tackifier for interpolymers of butadiene with acrylic nitrile or other butadiene polymers and interpolymers. More particularly, the coal tars which are best suited are the thick, viscous liquid tars obtained from the distillation of coal, particularly the crude distillates from coke ovens. The interpolymer to be softened may be a 55:45 or 75:25 butadiene-acrylic nitrile interpolymer. The coal tar softener may be milled into the butadiene-acrylic nitrile interpolymer or it may be added to a solution or an aqueous dispersion thereof. In the example, 100 parts of a 55:45 interpolymer of butadiene with acrylic nitrile are milled at 120° to 130° F., and crude soft coal tar added thereto as fast as it can be absorbed by the interpolymer until about 50 parts of the softener have been thus incorporated. Fillers, pigments, vulcanizing agents, etc., may then be added. The resulting mixture will be somewhat tacky but by wetting its surface with acetone, ethyl acetate, methyl ethyl ketone, chloroform, chlorotoluene, isopropyl alcohol, etc., the interpolymer will have good tackiness.

Drew—U. S. Pat. 2,332,137—Oct. 19, 1943. *Adhesive Tapes.* (Assigned to Minnesota Mining & Mfg. Co., St. Paul, Minn.).

An adhesive sheet consists of a transparent sheet or film of a cellulosic material provided with discontinuous coatings of definite areas. This coating is preferably water-insoluble and is responsive to organic volatile solvent while being normally non-tacky so that it can be rolled upon itself without adherence of its convolutions. The base film may be of cellophane, cellulose acetate, cellulose ethers, etc. Such a base film is coated first with a primer coating of a thermoprene rubber derivative, produced as described in U. S. Pat. 1,605,180, or a polychloroprene, or a rubber-resin dispersed in an aqueous solution of glue, etc. Preferably, the base film is a cellulosic base which is softened with glycerine. A polychloroprene, or a cyclized sulfonated rubber derivative—Thermoprene—will strongly adhere to this softened cellulosic base. The solvent activable adhesive which is applied over this primer coating may be a rubber-resin cement. It is, however, preferable to use as adhesive a nitrocellulose varnish consisting of 9 parts of nitrocellulose, 15 parts of Rezyl-12 (the condensate of castor oil with phthalic anhydride), 16 parts of a 40% benzol solution of dammar resin, and 15 parts of ethylene glycol monoethyl ether.

Beekley and Sparks—U. S. Pat. 2,332,194—Oct. 19, 1943. *Vulcanized Butyl Rubber.* (Assigned to Standard Oil Development Co., New York, N. Y.).

In a method of vulcanizing an interpolymer of isobutylene with a small quantity of butadiene, generally from 70 to 99.5% monolefine with 30 to 0.5% diolefine, the interpolymer is compounded with sulfur, accelerator, etc., and vulcanized. The interpolymer, in vulcanized or vulcanizable form, may be admixed with natural rubber or other butadiene polymers or interpolymers and the mixture then vulcanized. The interpolymer may be produced by mixing the monolefine, such as isobutylene, with butadiene, isoprene, chloroprene, cyclopentadiene, etc., in the required proportions and the mixture then polymerized at — 50° to — 150° C. in the presence of aluminum chloride, boron trifluoride, etc., as catalyst, dissolved in ethyl or methyl chlorides, thus obtaining a polymer having a molecular weight from 50,000 to 250,000. About 5% of sulfur with 1% of tetramethyl thiuram disulfide and 10% of zinc oxide can be incorporated in the interpolymer which may then be vulcanized at 165° C. from 15 minutes to 1 hour, thereby obtaining vulcanizates having a tensile strength of 3500 lbs./sq. in. and an elongation from 700 to 1100%. Fillers, such as 50% of carbon black with 20% of whiting and 1% of stearic acid, may be added to the interpolymer together with the vulcanizing ingredients. The product can be worked in a milling machine to any desired plasticity. When equal weights of this interpolymer and polychloroprene, polybutadiene, polyethylene, butadiene-acrylic nitrile interpolymer, Thiokol, etc., are used and vulcanized at 125° to 165° C. for 15 minutes to 2 hours, valuable products are obtained. The accelerator used may also be 0.5% of Ethyl Selenac, which is the selenium salt of diethyl dithio carbamate.

Sarbach—U. S. Pat. 2,332,263—Oct. 19, 1943. *Plasticized Polybutadiene.* (Assigned to B. F. Goodrich Co., Akron, Ohio).

In a method of rendering the surface of butadiene-acrylic nitrile interpolymers tacky, the surface is treated with a solution of an alkyl phthalate alkyl glycolate in which the alkyl groups contain no more than six carbon atoms and include methyl, ethyl, isopropyl, butyl, amyl, n-hexyl, 2-ethyl hexyl, etc. These tack-imparting type compounds consist of methyl phthalyl methyl glycolate, ethyl phthalyl ethyl glycolate, methyl phthalyl ethyl glycolate, ethyl phthalyl methyl glycolate, butyl phthalyl butyl glycolate, etc. Any of these tackifiers may be dissolved in acetone, methyl ethyl ketone, ethyl acetate, chloroform, isopropyl chloride, ethylene dichloride, benzyl alcohol, etc. Thus, the tackifier solution may consist of 10 parts of isopropyl chloride, 10 parts of acetone, and 1 part of ethyl phthalyl ethyl glycolate. A stock of 75:25 butadiene-acrylic nitrile interpolymer is sheeted into a sheet about ⅛ inch thick. It is then roughened by contacting the surface with a rotating wire brush and the tackifier solution then applied; or the solution of the tackifier may be first applied to the face of the sheet and this treated surface then roughened with the wire brush while the coating is still in liquid form so as to cause its penetration into the interpolymer. Solutions of 5, 20, 33 and 50% concentration may be used. The interpolymer may contain 25, 35 and 45% of acrylic nitrile, alpha-methacrylic nitrile, alpha-ethacrylic nitrile, etc.

(To Be Continued)

BACK THE ATTACK
BUY
WAR BONDS AND STAMPS

Editorials . . . . . .

Rubber Crisis

NATURAL rubber supplies are now in their most crucial stage since Pearl Harbor. Stocks on hand at the end of last year, according to a recent report from the Rubber Reserve Co., reached the all-time low of 93,000 long tons. Due to special procurement efforts and Lend-Lease arrangements, imports jumped sharply from 34,000 tons in 1943 to 98,000 tons in 1944, and will probably increase still further this year. But as the new heavy-duty tire program moves into high gear the crude rubber situation will reach a crisis, since such tires still call for as much as 30% of natural rubber in the compound.

The only certain answer to this situation lies in recapture of some of the plantations in the Far East, and we suspect that the need for natural rubber may well dictate the next military maneuver in the Pacific. Despite the number of "unknowns" concerned with such plantations, especially as to the condition in which they will be found, it is reasonable to assume that fairly large amounts of rubber will be forthcoming within a short period of their capture. The machinery to restore production and to assure early shipments has already been set up.

There are only two other methods open for increased supplies of natural rubber: (1) Agreements with other Allied rubber-consuming nations to use greater amounts of American-made synthetic rubber in exchange for larger amounts of natural rubber; and (2) Increased production of guayule. As to the first solution, Great Britain is now releasing more rubber to the United States from Ceylon, and Brazil is sending additional supplies from the Amazon. As to the second, present mills are turning out 2,000 tons of guayule this year, but it is estimated that such production can be doubled if Congress grants funds for at least two more mills. Government agencies charged with rubber procurement are well aware of the situation, and early action should occur.

Labor Paradox

THE Detroit plant of the United States Rubber Co. has become the scene of a three-way jurisdictional dispute, which sets up a labor paradox unique in America's labor history, and also furnishes the answer to why unions in general are very careful in making full use of their disciplinary powers. The dispute now involves the United Rubber Workers of America (C.I.O.), the United Auto Workers (A.F.L.), and the Mechanics Educational Society of America (Independent). The U.R.W.A. holds a maintenance-of-membership contract with U. S. Rubber.

The situation began to develop late last year when some 1,200 employees at the plant walked out in what was termed a "wildcat" strike. In keeping with its "no-strike" pledge, and using its disciplinary powers, as provided in its constitution, the U.R.W.A. put the strikers on trial, found some 700 guilty of violating the union's pledge, and fined them $12.50 each. Approximately 550 of the workers refused to pay the fine, with the result that the U.R.W.A. sought their discharge from U. S. Rubber under its contract with the company. In a precedent-making decision, the National War Labor Board ruled that the fines, plus reinstatement fees of $6.00 each, should be deducted by the company from the pay envelopes of the employees involved. The United Auto Workers threatened to sue the company if it made such deductions.

As might be expected, most of the 550-odd employees affected "resigned" from the U.R.W.A. and joined one of the two other unions, most of them becoming members of the M.E.S.A. Both the M.E.S.A. and the U.A.W. have petitioned the N.L.R.B. for new elections in the Detroit plant. According to its past record, the M.E.S.A. has never sought an election unless it felt it had a good chance of winning. No decision on either petition has yet been made by the Labor Board, but one should be forthcoming shortly. As to U. S. Rubber itself, the company is watching developments closely—and saying nothing.

CURRENT NEWS OF THE MONTH

17 ADDITIONAL TIRE PROJECTS APPROVED; CARBON BLACK SHORTAGE LEADS TO ACTION

SEVENTEEN additional projects in the 6,000,000-a-year heavy duty tire program, with funds supplied by the Defense Plant Corporation, have been authorized by the War Production Board since our last report. This brings to 32 the number of projects authorized to date, with several additional projects to be authorized shortly. Title to all of the plants rests with DPC, with actual operations in the hands of the tire and tube companies named. At the same time, however, a serious shortage of carbon black has come to the fore, and a number of drastic steps, including a sharp curtailment program, have been taken to meet this new emergency. Shortage of rayon tire cord also continues, but recent steps taken to meet this threat to continued tire production at new high levels indicate that sufficient supplies will shortly be available.

Included among the 17 projects approved since our last issue, several of which call for the construction of complete new tire plants and two of which are listed as "special projects", were the following, arranged by location for convenience:

List of New Projects

Tuscaloosa, Alabama—To be operated by Robbins Tire. $500,000 allocated for an additional building and expansion of present buildings. Estimated annual production, 1,200,000 large-sized tubes. Initial production, May, 1945.

West Haven, Conn.—To be operated by Armstrong Rubber. $2,000,000 allocated for a new building and additional machinery and equipment. Estimated annual production, 180,000 truck tires. Initial production, July, 1945. (Part of total expenditure only).

Ottawa, Illinois—To be operated by Inland Rubber. $7,000,000, representing only part of total outlay, allocated for construction of a new plant. Estimated annual production, 360,000 truck tires, 360,000 tubes, and 360,000 flaps. Initial production, August, 1945.

Findlay, Ohio—To be operated by Master Tire. $600,000 allocated as partial authorization of funds for additional machinery and equipment. Estimated annual production, 93,800 truck tires. Initial production, September, 1945.

Jeannette, Penna.—To be operated by Pennsylvania Rubber. $300,000 allocated as partial authorization of funds for a new factory. Estimated annual production, 151,500 truck tires and 26,800 tubes. Initial production, July, 1945.

Akron, Ohio—To be operated by Goodrich. $30,000 allocated as partial authorization of funds for additional machinery and equipment. Estimated annual production, 67,000 bogie tires. Initial production, September, 1945. (This is one of the special projects).

Baltimore, Md.—To be operated by Schenuit. $30,000 allocated as partial authorization of funds for a new factory. Estimated annual production, 12,000 airplane tires and 40,000 airplane tubes. Initial production, April, 1945. (This is a special project).

Eau Claire, Wisconsin—To be operated by U. S. Rubber. $1,500,000 allocated as partial authorization of funds for additional machinery and equipment. Estimated annual production, 306,000 truck tires, 306,000 tubes, and 306,000 flaps. Initial production, May, 1945.

Mansfield, Ohio—To be operated by Mansfield Tire. $1,500,000 allocated for additional machinery and equipment. Estimated annual production, 191,000 truck tires and 300,000 tubes. Initial production, April, 1945.

Indiana, Penna.—To be operated by McCreary Tire. $100,000 allocated for new machinery and equipment. Estimated annual production, 24,000 truck tires. Initial production, June, 1945. (McCreary previously received $650,000 for expansions dating back to 1943 but these expansions were entirely separate from the new heavy-duty tire program).

Waco, Texas—To be operated by General Tire. $1,500,000 allocated as partial authorization of funds for construction of a new factory addition. Estimated annual production, 60,000 truck tires, 60,000 tubes, and 60,000 flaps. Initial production, August, 1945.

Kansas City, Kansas—To be operated by Lee Tire. $4,000,000 allocated as partial authorization of funds for a new factory. Estimated annual production, 270,000 truck tires, 270,000 tubes, and 270,000 flaps. Initial production, September, 1945.

Natchez, Mississippi—To be operated by Armstrong Rubber. $750,000 allocated as partial authorization of funds for new buildings and additional facilities. Estimated annual production, 151,500 truck tires and 300,000 tubes. Initial production, June, 1945.

Carlisle, Penna.—To be operated by Carlisle Tire. $200,000 allocated for additional machinery and equipment. Estimated annual production, 180,000 truck tubes. Initial production, May, 1945.

Mansfield, Ohio—To be operated by Mansfield Tire. $1,700,000 allocated as partial authorization of funds for new machinery and equipment. Estimated annual production, 148,000 truck tires. Initial production, August, 1945. (The machinery and equipment will be installed in a new building which is being financed by Mansfield Tire with the assistance of tax amortization certificates; this is the second expansion approved for the company).

Dayton, Ohio—To be operated by Dayton Rubber. $1,000,000 allocated for a new building and additional machinery and equipment. Estimated annual production, 500,000 truck tires and 500,000 tubes. Initial production, August, 1945. (In addition, Dayton will construct additions to its present factory through private funds with the assistance of tax amortization certificates; this is the second project approved for Dayton Rubber).

Barberton, Ohio—To be operated by Seiberling Rubber. $450,000 allocated as partial authorization of funds for new machinery and equipment. Estimated annual production, 143,500 truck tires. Initial production, July, 1945. (Several new complete additions will be privately financed by Seiberling with the assistance of tax amortization certificates).

Carbon Black Situation Serious

The inevitable shortage of channel black, which the industry has been predicting for almost a year, has been sharply brought to the fore by the increasing facilities for the production of heavy-duty tires. Several drastic steps have been taken by WPB's Rubber Bureau to curtail use of the black.

The first step in this direction was taken on February 10 by the issuance of Amendment 2 to Appendix II of Rubber Order R-1. This amendment adds a new list (List 35) to Appendix II under the title "Regulations for the Use of Carbon Black in the Manufacture of Rubber or Synthetic Rubber Products" and is designed to curtail carbon black consumption to the extent of 750,000,000 pounds a month.

In issuing List 35, James F. Clark, Director of the Rubber Bureau, stated that although new facilities to produce additional black are now being planned and expedited by the Chemicals Bureau

of WPB, immediate conservation is necessary until the supply can be adequately increased. The present restrictions, he pointed out, will obviously have to remain in force until the new supply becomes available, possibly late in the Spring.

The latest amendment to Appendix II of the Rubber Order not only places a limitation on the total permitted amount of carbon black for each rubber product but also places a special limitation on the percentage of permitted "channel type" black for each product. Future additions to List 35 are already under study and it is believed that subsequent regulations will result in the additional saving of 2,500,000 pounds a month. The aim of the Rubber Bureau, obviously, is to issue conservation orders designed to save a minimum of 10,000,000 pounds of carbon black a month.

The new List 35, which became effective February 15, contains five major highlights, as follows:

1. Because of extremely severe service conditions, bogie wheel tires and other rubber-covered wheels for tanks and half tracks are excepted from restrictions on the use of carbon black. Special combat tires capable of carrying military vehicles many miles even though punctured are also excepted from regulation.

2. The reduction in the amount of carbon black permitted in heavy-duty truck and bus tires, tubes and tire flaps, and in medium size truck tires, will amount to only 5 per cent. However, the reduction in passenger car tires will be 25 per cent. Tires for jeeps must be manufactured under the same 25 per cent reduction as passenger car tires.

3. Camelback will have to contain 10 per cent less carbon black.

4. The amount of carbon black permitted in belting, hose, packing and gaskets, as well as in mechanical goods, will be subject to general reductions. In many items the reduction will be great, but for certain items essential to the production and operation of war equipment the restrictions will be moderate. In general, the reduction for hard rubber products will be 20 per cent, though certain items (such as conductive hard rubber products) may consume the same amount of carbon black as is now used.

5. Waterproof rubber footwear and rubber-sole shoes will have to make out with 11 per cent less carbon black than is now permitted.

Restrict Grade A Camelback

On February 19 it was made known that the shortage of carbon black will indefinitely postpone the manufacture of Grade A camelback for recapping passenger car tires and small truck tires. On that date, Direction 9 to Rubber Order R-1 was revised so as to continue the manufacture of Grade C camelback in place of the prohibited Grade A. Originally the restriction on Grade A output was to extend only until March 31.

Grace A camelback is made entirely of Buna S and calls for relatively large quantities of carbon black, while in contrast Grade C uses approximately 30% of reclaimed rubber, which already contains large quantities of black. Because of the amendment to Appendix II of the Rubber Order mentioned above, future Grade C camelback will probably contain an even larger percentage of reclaimed rubber since that order specifies that camelback be made with 10% less carbon black than heretofore.

As a further conservation measure, it was reported the Armed Forces will hereafter use the Grade C camelback for recapping the smaller sizes of military tires.

New Facilities Soon Ready

Additional facilities for the manufacture of carbon black are being rushed to completion. For instance, the recent year-end statement of the United Carbon Company revealed the company expects to begin initial operations in May in a new channel black plant at Odessa, Texas. This plant, being constructed with government funds at a cost in excess of $6,000,000, will have an estimated annual capacity of 40,000,000 pounds. United Carbon has also engaged in an expansion program of repairs of its various channel black plants to secure maximum possible output, and upon completion of all projects now under construction the company's annual rate of production will reach approximately 280,000,000 pounds.

In addition, the new Continental Carbon plant at Sunray, Texas, which will have a capacity of approximately 15,000,000 pounds a year, is expected to go into operation within the next month or so. Foundations have also already been laid for a carbon black plant at Clemens Dome, Texas, which will be operated by the Jefferson Lake Sulphur Company. This plant is expected to be in operation early next month.

Filing Dates Revised

In the meantime, the allocation of carbon black to consumers and suppliers has been facilitated by stepping up the filing date for applications. This was accomplished by WPB with the issuance of an amendment to Schedule 2 to Order M-300. Under the terms of the amendment, applications for April allocations must be filed with WPB by March 10 by consumers and by March 15 by suppliers and thereafter consumers' applications must be filed on the first of each month and suppliers' applications on the fifth of each month. Previously, consumers had to file on the 15th of each month and suppliers on the 20th. The new carbon black order is known officially as Order M-300, Schedule 32, as Amended March 8, 1945.

Allocations of carbon black for March and April are expected to approximate the quantity allocated by WPB for February, barring unforeseen contingencies. The February allocation amounted to approximately 78,000,000 pounds.

Bottleneck To Be Investigated

According to an announcement made in Washington on March 6, the special committee of the Senate investigating the war program, now known as the Mead Committee and formerly known as the Gillette Committee, will conduct a preliminary investigation into the carbon black shortage. A representative of the Committee said that it was decided to conduct a staff inquiry into the matter after the Committee was informed that the deficiency of carbon black is retarding tire production, and added that if the facts so warrant, a full investigation of the shortage will be made.

No effort has been made on the part of the War Department to conceal the seriousness of the carbon black shortage and one spokesman for the Department has stated that it will seriously impair military planning and strategy, especially since military tire requirements for the second quarter of the year are 30% higher than for the first quarter.

There is a tendency in some official quarters to place the blame for the shortage on the WPB Chemicals Bureau. According to H. G. Batcheller, WPB Operations Chief, the Chemicals Division "just didn't believe industry and labor could meet the high new quotas demanded by the Army" and the increase of tire production has been so rapid that it caught the Division flat-footed.

Both the War Department and the WPB Rubber Bureau, along with industry proper, have been warning the Chemicals Bureau for almost a year that a shortage was impending. The carbon black manufacturers themselves believe that major responsibility rests with OPA since if an increase had been allowed in the price of channel black, as requested several times by the manufacturers, the current production of such black would be appreciably higher than it is.

More Reclaim Needed

As a result of the carbon black shortage, Mr. Clark stated on February 27 that the output of reclaimed rubber must be increased from the present monthly rate of 19,000 tons to approximately 25,000 tons. Pointing out that every new tire contains a certain amount of reclaim, the Director of the Rubber Bureau said that the increased output of reclaim is called for primarily because of the need for larger quantities of the material in the expanded production of heavy truck and bus tires. As an example, he cited the fact that a 10.00 x 22, 12 ply, rayon cord military tire of the mud and snow type contains 18 pounds of crude, 40 pounds of synthetic and 3½ pounds of reclaim.

Estimating that the rubber reclaiming industry in the United States employs about 3,500 people, Mr. Clark said that the projected 6,000 tons-per-month increase in the production of reclaim can be carried out without additional facilities "providing the industry can secure additional employees". As an aid

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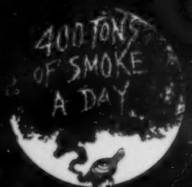

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in this direction, the reclaim industry has been designated by the War Manpower Commission as a "critical activity" on the latest List of Essential Activities.

According to Mr. Clark, tires and tubes today consume over 50% of all reclaim while camelback accounts for about 8% of the total. Another substantial user of reclaim is the heel and sole industry which consumes about 17% of the total, while relatively small percentages go into wire and cable, hose and tubing, packing and gaskets, belting, and other miscellaneous mechanical goods.

The burden of replacing carbon black in rubber compounds will fall not only on reclaimed rubber but on other types of reinforcing pigments, especially zinc oxide. The consumption of zinc oxide by the rubber industry is expected to increase 25% this year over the approximate 50,000 tons used in 1944. Zinc oxide plants are currently operated at about 90% of capacity, according to trade report, but lack of manpower prevents further expansion. Current output is running at about 11,000 short tons per month. Mineral rubber, too, is expected to be in greater demand since it has some merit as a reinforcing agent. Greatly increased demand for clays and whiting is also anticipated.

Control of Reclaim Tightened

Several changes in rubber Order R-1, designed to tighten control and use of reclaimed rubber, are contained in Amendment No. 3 to that order, issued by WPB on March 6. Under the new amendment, reclaimed dispersions (such as Dispersite, Syntex, etc.) have been added to the list of those materials which may not be consumed without first obtaining authorization to do so from WPB on Form WPB-3662.

The amendment also eliminated that portion of the original rubber order under which any person wishing to manufacture products which are not permitted by the order could apply for authorization to consume GR-M, GR-S, reclaimed or scrap rubber, or, in other words, the consumption of such materials are temporarily restricted to the manufacture of permitted products only or to fill military orders.

Finally, the amendment limits the amount of reclaim which can be secured for experimental use without authorization to 200 pounds per month. No reclaim dispersions can now be secured for such purpose. Previously no restrictions for such experimental uses applied to either reclaim or reclaim dispersions.

Amendment to Appendix III

Two additional changes in the rubber order are contained in an amendment to Appendix III, issued by WPB on March 5. Officially termed Rubber Order R-1, Appendix III, as Amended Mar. 5, 1945, this amendment adds gasoline dispensing hose (Specifications AXS-1054, AXS-1055, 33-H-2, 33-H-8, 26551, FS-ZZ-H-471, and similar types) to the types of hydraulic and gasoline dispensing hose which may not be delivered to any person except as specifically authorized by WPB.

This amendment also states that except in the production of passenger tires for the War Department, Navy Department, Maritime Commission, Aircraft Resources Control Office, and the Foreign Economic Administration for Lend-Lease account, no manufacturer of passenger, motorcycle, or bicycle tires shall consume any cotton in the production of such tires except as specifically authorized by WPB.

Statement on Tire Production

According to a statement by Mr. Batcheller on March 3, a "superhuman effort" by men and management in the tire industry to supply the increasing demands of the European front boosted truck tire production 43% in three months despite a severe winter, freight embargoes and power difficulties. He pointed out that 1,770,000 truck and bus tires (A-1 to A-6) were turned out in January as compared with 1,217,000 such tires last October.

The January output of jeep tires and small truck tires was termed "particularly gratifying" by Mr. Batcheller. Output of the larger sizes was also up to a new high, he said, though some sizes (9.00 through 14.00 cross-section) were still insufficient to meet the stated needs of the armed services.

Mr. Batcheller explained this inadequacy as "no fault of the tire industry or the tire workers, all of whom have done a fine job." He said that the greatly increased military requirements that have become necessary since last November have posed almost insoluble practical problems for the tire industry. He also pointed out that "this all-out effort by the tire industry to meet the war needs on all fronts" has been made at the expense of reducing inventories of critical raw materials.

"The tremendous rate of tire production has practically exhausted the inventory of carbon black," he said, "while the inventory of tire cord stocks has dropped down to dangerously low levels. The supply of these two critical components must be brought back to full working levels. Definite steps are being taken to develop new facilities for making carbon black and tire cord, so we may shoot at new tire production goals."

Stated requirements for tires for the second quarter of 1945 have been re-

NATURAL RUBBER AUTHORITIES INSPECT SYNTHETIC RUBBER PLANT

Members of the British and Dutch delegations to the second International Rubber Conference, recently held in Washington, D. C., are seen here sampling chunks of synthetic rubber at the government-owned copolymer plant in Louisville, Kentucky, operated by B. F. Goodrich Co. Left to right: Dr. T. A. Tengwall, Board for the Netherlands Indies; William S. Richardson, manager, Goodrich Chemical Division; F. G. Lee, principal assistant secretary, United Kingdom treasury; Sir Walrond Sinclair, Institute of the Rubber Industry (in rear); A. G. Pawson, London Rubber Secretariat; and J. N. DuBarry, War Supplies and Resources Board.

ceived from all claimant agencies, Mr. Batcheller reported. The job of supplying large truck tires to the armed forces will become increasingly difficult and urgent during the months ahead, he said. The need for "combat run-flat" tires has increased over 150 per cent. Over-all military requirements for the second quarter are 30 per cent above those for the first quarter. Mr. Batcheller also made public the following data on production of tires other than truck sizes:

1. During January, the preliminary production figure for airplane tires was 110,200, which practically met all orders for tires for airplanes and marks an eight per cent improvement over October, 1944.

2. During January, 227,000 tractor-implement tires were produced, an improvement of 29 per cent over October production. However, military needs for large tires made it impossible to sustain this increased production of tractor-implement tires, because carbon black and other components are in critically short supply and must be used to make the more important types of military tires. This conflict will make it necessary to draw on inventory in the second quarter to satisfy necessary requirements for the farm tractor and implement tires. As a result, users of farm tractors and road-building equipment must use great care in making present tires last.

3. During January, 2,013,000 passenger car and motorcycle tires were produced. This is 62,000 less than were produced in October, 1944. Only sufficient cotton cord to make approximately 5,000,000 tires in the first quarter is available.

Rayon Cord Conservation Measure

Additional steps to channel available supplies of rayon tire cord into production of the most critical types of heavy-duty tires were taken by WPB on February 10 with the issuance of Amendment No. 1 to Rubber Order R-1, Appendix II, as Amended Nov. 9, 1944. The amendment is expected to make available considerable quantities of rayon cord for use in meeting the increased schedules for airplane tires and heavy-duty truck and bus tires.

Specifically, the amendment revises List 32, which sets forth types of tires that have first call on available supplies of rayon tire cord. Under the terms of the amendment, rayon tire cord may not be used hereafter in the manufacture of small truck tires, 7.50, 8-ply, standard highway type. This tire group includes rim diameters of 20, 18, 17 and 16 inches. The same prohibition also applies to mud-snow tread military tires, sizes 7.50 x 20 (8-ply) and 9.00 x 16 (8-ply). Future fabrication of these types will utilize cotton tire cord in place of the prohibited rayon cord.

A further prohibition prevents use of new rayon cord in the manufacture of tire repair materials. However, no restriction is imposed on the use of scrap materials left over during the manufacture of tires made with rayon cord. All of the new limitations on the use of rayon tire cord are effective February 15.

The revised List 32 supersedes Direction 5 of R-1, which is revoked as of February 15. Direction 5 was issued on December 13, 1944, for the purpose of effecting temporary revisions in the preference pattern set forth in List 32.

Return of Six-Day Week

Because the production of heavy-duty tires has temporarily outrun the supply of carbon black, and in some plants of tire cord, a joint statement issued by WPB and the War Department on March 7 advised the tire industry and the tire workers that they are temporarily released from the pledge of seven-day week operations made on December 10 and they may go back to a six-day week for the month of March. It is hoped that both carbon black production and tire cord fabrication will be brought up to a point within the near future where they will again support a seven-day tire production.

In a telegram sent to the tire companies and to the United Rubber Workers of America, both WPB and the Army gave assurances that no effort is being spared to "step up production of carbon black, tire cord and other tire components so as to keep abreast of the production accomplishments of the workers and management in the heavy tire plants." Return to the seven-day week as soon as possible was urged "in order to meet the extremely urgent requirements of military operations now going on at top speed on all fronts".

WPB said steps being taken to overcome the shortage in carbon black include strengthening the manpower situation in existing carbon black plants, speeding up the rate of carbon black production, and the opening of additional facilities in the Southwest. Manpower in plants that have been lagging in the production of tire cord is also being reinforced.

Incidentally, the carbon black situation is so serious that it is understood that several tire plants are operating on a hand-to-mouth basis with threatened shut-downs if deliveries do not increase substantially in the immediate future. Some plants, it is understood, are short as much as 35% of their immediate requirements and no promise of relief can be expected before June or July. In Washington circles it is rumored that a drastic overhauling of agencies charged with carbon black procurement is in the offing.

It has also been learned that the executive board of the U.R.W.A. has authorized union officials to make an investigation of the carbon black situation on their own, preliminary to making a full report to the union membership. Sherman Dalrymple, president of the international union, said the union wants its members "to have the truth about the whole situation so they will understand why it is impossible to continue the all-out production program", adding that "our morale and absentee problems have been hard enough to solve without this additional difficulty".

Draft Threatens Industry

The current necessity of drafting non-essential workers in the 18-29 year group is expected to interfere with tire production in the immediate future unless some sort of special action is taken by Selective Service. It is estimated that approximately 2,400 men in this age group, more than half of whom are directly associated with tire production, including college-trained chemists, engineers and technicians, may be taken from the rubber factories. This estimate is based on the recent order to the effect that none of the men in the 18-29 age group, who were reclassified 1-A by January 1, will be deferred in the new drive. The situation, insofar as tire production is concerned, is somewhat paradoxical.

A plan approved by the Office of War Mobilization governing the procedure for making requests for deferments of a limited number of men under 30 years of age who hold key positions in war industries was announced jointly by Selective Service and WMC on February 18. The plan was worked out by a committee appointed to protect the vital "hard core" of workers in the 26-29 age group in war production in view of increased calls for men for the Armed Forces and the necessity of filling such calls with as many men from the younger age group as possible.

The plan provides that government agencies responsible for procurement and production of war goods and those responsible for the maintenance of essential services may furnish local boards with the names of men 18-29 years of age who, in the interests of the war effort, should be given the greatest consideration for occupational deferments. The Rubber Reserve Company is one of the government agencies named in the plan, which is not expansive enough to cover the average tire worker.

In the meantime, WMC continues to have difficulties in enforcing its labor draft plan in the New Bedford, Mass., area. Several workers in textile plants have refused to transfer to the two high priority tire cord plants in that area, namely those operated by the Fisk Tire Division of U. S. Rubber and by Firestone. A WMC order to the textile companies to fire workers who refuse to accept such transfers was met by the threat of a textile strike. Stating that Fisk and Firestone operated "the most anti-union mills in this city and conditions in those two mills are worse than in other places in the city", an executive of the Textile Workers Union of America asserted that "if the government wants to come into New Bedford and take over the Fisk and Firestone mills at no profit, we will man those mills in no time".

On latest reports (March 8) a work stoppage in all New Bedford plants is

threatened unless WMC withdraws or suspends for 30 days its attempt to draft textile workers for jobs in the two tire cord plants. WMC has also been called upon to cancel its directive "as a preliminary condition to an attempt to recruit 250 volunteer workers to man the Fisk and Firestone tire cord plants". Out of 90 workers called to transfer to the tire cord plants, only one was employed.

To insure the continued production of rayon cord for the tire program, the War Department was directed on February 18 to seize the strike-bound plant of the America Enka Corporation at Enka, N. C. The strike, 10 days old at the time, had reduced tire output by 5,000 a day, according to an Army official. At this writing, Col. C. G. Pratt, of the General Staff Corps, is in charge of operations. The dispute between the workers and the management is over contract grievances.

Panel Hears Wage Demands

Hearings were held in Washington on March 5 on new wage demands presented by the United Rubber Workers of America on behalf of 140,000 workers in some 90 rubber plants. The hearings were conducted before a special panel of the War Labor Board consisting of William E. Simkin, former chairman of the WLB Ship Building Commission; Walter E. White, assistant to the chairman of the Business Advisory Council at Washington; and D. R. Stewart, member of the Executive Council of the Oil Workers International Union, C.I.O.

The special panel heard arguments on the demands of the union for a 10c-an-hour night shift differential, more liberal vacations and a paid lunch period, in addition to a general wage increase of 17c an hour. The union's case was presented by Garnet Patterson, chief counsel, while most of the rubber firms involved were represented by Attorney L. M. Buckingham of Akron. It was explained that "the cost of living" demands on which only briefs were submitted are for 17c an hour if the panel denies the night shift differential, but if that differential is granted the demand scales down to 12c an hour. WLB has already pointed out that this request could not be granted under the "Little Steel" formula.

According to Mr. Buckingham, the union's demand for "uniform and more liberalized vacations" would increase the rubber industry's labor costs by 24c an hour. Attacking demands for one week vacations after one year and two weeks after three, the Akron attorney told the panel that such a program would amount to a 22% wage increase, and added that if these vacation demands were granted, the industry would have to seek price relief from OPA and the Office of Economic Stabilization. Union counsel argued, however, that vacation plans in the rubber industry were far less liberal than plans of other comparable industries in similar production areas.

RUBBER RESERVE ISSUES REPORT ON SYNTHETIC RUBBER PRODUCTION

A sharp increase in the 1945-46 program for production of synthetic rubber in the United States is necessary in order to meet military and essential civilian transportation requirements, according to an announcement made on March 12 by the Rubber Reserve Co. At the same time, Rubber Reserve reported that production of synthetic rubber in the United States in 1944 totaled 763,255 long tons, a figure exceeding the average annual tonnage of natural rubber consumed in this country during the pre-war years 1937-41, inclusive.

Production scheduled for 1945 is, in round figures, 1,000,000 tons or 31 per cent more than last year, and for 1946, 1,200,000 tons, or 58 per cent above 1944 production. These amounts exceed average annual world consumption of rubber in the ten years preceding the outbreak of the war. Largest world consumption for any pre-war year was 1,108,000 tons in 1939. To reach the wartime goals ahead, Rubber Reserve will be obliged to increase production to 130 per cent of present rated capacity by mid-year and, to meet the 1946 goal, production must be jumped to 145 per cent of present rated capacity. Above-capacity operations are possible because research, scientific development, and operating experience have led to many refinements in production techniques.

While current consumption in the United States will this year top all previous records, Rubber Reserve reports that the production goals can be reached provided:

1. Adequate supplies of petroleum, alcohol and chemicals are made available.
2. Plant additions and improvements representing approximately three per cent of the initial cost of the plants are made.
3. A sufficient body of technically trained and skilled men is made available to operate the plants at these higher rates of production. About 22,000 workers are currently engaged in the Government program.

The switch-over of American industry from natural rubber to synthetic rubber has been accomplished since the Japanese, early in 1941, seized 90 per cent of the world's natural rubber-producing territory. In 1942, natural rubber represented 96 per cent of all rubber consumed in this country.

While the United States has carefully husbanded its stock of crude rubber, the need for even tighter conservation is great, as the following statistics covering imports, consumption, and the year-end stockpile of natural rubber indicate:

Year	*U. S. Imports (Net)*	*U. S. Consumption*	*Year-End Stocks*
1938	406,000	437,000	231,000
1939	486,000	592,000	125,000
1940	811,000	648,000	288,000
1941	1,023,000	775,000	533,000
1942	271,000	376,000	422,000
1943	34,000	317,000	139,000
1944	98,000	144,000	93,000

Meanwhile, the report indicated, synthetic rubber production has mushroomed, as shown by the following figures: 1942—24,000 tons; 1943—234,000 tons; 1944—763,000 tons; 1945—1,000,000 tons; 1946—1,200,000 tons. (Figures for 1945 and 1946 represent production scheduled.)

British Issue Report

An interesting report on some of the steps taken to increase the cultivation and collection of crude rubber in various British colonies and possessions was recently issued by the British Information Services, an agency of the British Government, an abstract of which follows:

Ceylon: In order to encourage maximum rubber production in Ceylon, where "slaughter tapping" has occurred (tapping the trees so extensively that they die from a complete loss of vitality within twenty-four months), the British Government reimburses planters up to $180.00 per acre for replanting. Participants in the scheme must slaughter-tap a minimum of 20% of their total rubber acreage. The production drive has been coordinated with an agricultural campaign to increase local food production, with the result that both food crops and rubber trees have been planted on the same acreage.

Besides intensive tapping, returning former rubber-producing trees to production and the planting of additional land with new trees has been undertaken to increase production, and latest figures indicate more than 36,000 acres have been given over to new plantings.

The maximum rubber output of Ceylon, the largest source of crude rubber presently available to the Allies, has been put at the disposal of the United Nations, and the United States received about 20,000 tons of crude rubber from this source in 1943.

India: India's first wild rubber plantation came into production in April, 1944. The plants *(cryptostegia grandiflora)* produce a rubber of good average quality, and tapping maturity is reached within twelve months. 5,000 acres of land at Muttra were sown with seed collected from various parts of India and it is anticipated that this plantation will produce about 500 tons of crude rubber per year.

At the time of sowing, very little was known of what conditions favored the plant's growth, nor what quality of crude rubber it would produce, although latest reports show that the Muttra district favors its cultivation, and the quality of the rubber, on the whole, is good. However, a satisfactory method of ex-

tracting the fluid has not been discovered, although experimentation will undoubtedly reveal the quickest and most efficacious means.

India's rubber production is constantly expanding, and although her yearly production is only small at present, and mostly used locally for war purposes, it was expected that sufficient rubber would be produced in 1944 to supply both domestic requirements and the requirements of British and American forces in the country.

Africa: Rubber plantations in the Cameroons produced in excess of 1,000 tons of rubber in 1942, the latest figures available—more than double the 1938 production. Prior to 1914, the Germans attempted to promote rubber production in Tanganyika, but eventually abandoned the effort as futile. However, Malayan experts are aiding in locating overgrown rubber plantations and returning them to productiveness, and by 1942 Tanganyika was producing approximately 1,000 tons of rubber yearly.

Introduce Guayule Bill

A bill designed to assure the continued use of guayule rubber for at least ten years has been introduced in the House of Representatives by Congressman W. R. Poage, of Texas. Mr. Poage was a member of the House committee which recently investigated the entire guayule situation, and which made specific recommendations to Congress, many of which are now contained in his proposed legislation.

Under the terms of the bill, private industry would take over the production of guayule with a government-guaranteed ceiling. The price would be stabilized for a ten-year period with farmer and processor sharing in the 28-cent-a-pound figure proposed.

According to William O'Neil, president of the General Tire & Rubber Co., and one of the foremost proponents for guayule cultivation, Paul Roberts, of the U. S. Forest Service, who is in charge of the government's Emergency Guayule Rubber Project, is convinced "that farmers and industry can join to produce guayule rubber at mutual profit." he has also stated that Mr. Roberts believes guayule should be grown on marginal land, since not only is such land cheaper, but the rubber content of the plants is greater.

Mr. O'Neil has contended from the very beginning that guayule would do best on poor land and has urged the government to move the project from California to Texas or Mexico. General Tire opened a processing plant for guayule at Cuatro Cienegas, Coahuila, Mexico, about a year ago, and reports that the output has been increasing steadily.

Price for African Rubbers

According to Circular No. 38, issued by the Rubber Reserve Co. on February 16, approximately 7,000 long tons of African rubber will be shipped to that agency from stocks which have been accumulated in the United Kingdom and the Union of South Africa. Some of this rubber has already been received and in the absence of an established price it has been sold to manufacturers against pro forma invoices. Shipments received to date have been washed and dried.

It has since been determined that the African rubber described will be sold by Rubber Reserve at a price of 10½c per pound for "civilian use," ex dock or warehouse, at the option of Rubber Reserve, plus the uniform freight charge. In the event any such rubber is used in connection with "war orders," manufacturers should report the amount of rubber so consumed in accordance with Circular No. 22, in order that the additional payment of 17½c per pound may be collected by Rubber Reserve from the appropriate governmental procurement agency.

Appropriate adjustments will be authorized by Rubber Reserve in connection with all sales of African rubber against pro forma invoices which were made prior to the establishment of the 10½c price.

PRICES FOR TIRE REPAIR MATERIALS CUT BACK BY NEW CEILINGS

Prices for tire boots, patches and reliners made from scrap materials have been substantially reduced by new dollar-and-cent ceilings established on the sale of these items. The new ceilings, covered in Amendment No. 2 to R.M.P.R. 131 (Camelback and Tire and Tube Repair Materials), cut back the prices of manufacturers and wholesalers approximately 20%, while at the retail levels the reductions range from 10 to 33⅓%. The new ceilings are effective March 27.

Heretofore, the ceilings represented March, 1942, "freeze" levels, and OPA explained that the new ceilings have been established at lower levels because there had been an undue rise in prices between October, 1941, and March, 1942.

An extensive study of costs, and consultations with individual manufacturers and the Patch and Reliner Manufacturers' Industry Advisory Committee, showed that the reduced ceiling prices could be put into effect without adversely affecting production, OPA said. Meetings were also held with groups and individual members of the retail trade in New York, Chicago and Washington, D. C., when general approval was expressed with the new ceilings as well as with other new provisions.

For reliners, the main item in this group, the new retail ceilings will be $2.50 each for all uncemented passenger car tire reliners and $2.75 each for all cemented passenger car tire reliners. Maximum charges permitted for inserting a passenger car tire reliner are 50 cents without cementing, $1 for cementing a cemented reliner, and $1.25 for cementing an uncemented reliner.

Truck tire reliners will have retail ceiling prices ranging from $3.00 to $12.90 each, depending on size and ply. Maximum charges permitted for inserting a truck tire reliner range from 50 cents to $2.60. Retail ceilings for boots and patches range from 7 cents to $3.75 each, depending on size and ply. Maximum charges for cementing a patch or boot are 15 cents for the smaller sizes and 35 cents for the larger sizes.

Most reliners, patches and boots bought by the general public are made from scrap materials and are covered by the new action. To sell at the new ceiling prices, every item must meet specified minimum quality standards, which are established for the first time. A maximum price of one cent a pound is established for reliners, patches and boots not meeting the minimum specifications, whether sold at retail, wholesale or manufacturing level.

Another new provision in the amendment requires identification marks by manufacturers on all reliners, patches and boots.

Revision of Tire Regulation

At the same time OPA also announced a complete revision of the tire and tube regulation, involving several changes in the establishment of ceiling prices for new and used tires and tubes, recapped tires, recapping and repair services. On these items none of the changes will alter the existing general price regulation. The new regulation is termed Revised Maximum Price Regulation No. 528 (Tires and Tubes, Recapping and Repairing, and Certain Repair Materials), and becomes effective March 27.

For each of these groups and services maximum dollar-and-cent prices have been added for new sizes and types of tires and tubes and the servicing of them. A new provision requires that the maximum prices for sizes and types not listed in the regulation shall be determined upon application to OPA's national office in Washington, D. C.

A new category, known as factory rejects, is established for new tires and tubes. Heretofore, there were only two categories, new and factory seconds. The retail ceilings for repaired factory rejects will be 25 per cent under those for factory seconds. For unrepaired factory rejects the retail ceiling prices for the repairs needed must be deducted. All factory seconds and factory rejects will be marked as such by manufacturers.

Categories are also changed for the purpose of pricing used tires and tubes. Heretofore, there were three groups, continuous tread, smooth tires, and basic tire carcasses. The new revision establishes only two categories—used tires and basic tire carcasses. Each category is subdivided into three groupings, sound, repairable, and not usable, with a fourth

category for used tires, known as limited service.

Maximum retail dollar-and-cent prices are established for the first time on used airplane tires. The new ceilings are in line with existing prices for comparable tires. New ceilings are added for recapping pneumatic industrial tires and airplane basic tire carcasses and for passenger car tires recapped with studded or mud and snow treads.

Additional orders issued in recent weeks of direct interest to the rubber industry follow:

HEELS AND SOLES

With the issuance of Amendment No. 19 to M.P.R. 200 (Rubber Heels and Soles in the Shoe Repair Trade), effective February 23, OPA has established dollar-and-cent ceiling prices for sales in the shoe repair trade of brown synthetic rubber heels and soles and for black synthetic rubber soles. These ceilings, it was explained, will cause no increase in prices to the public for the same quality heels and soles. WPB recently authorized the manufacture of brown heels and soles, prohibited since shortly after Pearl Harbor.

The new ceilings for manufacturers and wholesalers, on the brown heels and soles, are 20 per cent higher than the levels they had in March, 1942, for brown natural rubber heels and soles. This increase, OPA said, is necessary because of higher costs involved in the manufacture of these items from Buna S compared with natural rubber. Wholesalers have been given the increase also because their prices are historically linked with manufacturers.

Manufacturers' and wholesalers' ceilings for black synthetic rubber soles are spelled out at the levels prevailing in March, 1942, for the same type of soles made with natural rubber. The new ceilings of shoe repair shops for brown rubber heels attached are spelled out in dollars-and-cents at the levels prevailing in March, 1942, for brown heels made from natural rubber. No increase is provided over March, 1942, levels because shoe repairmen will be able to absorb the increase allowed manufacturers and wholesalers on these heels, OPA said.

For brown and black synthetic rubber soles attached, shoe repair shops continue with their March, 1942, "freeze" ceilings under the services regulation, as is the case with leather soles attached to shoes, except where specific area pricing orders may be issued.

The new action also provides ceilings for shoe repair shops on both brown rubber heels and brown and black rubber soles that may be sold unattached. These are 40 per cent of the ceilings for the same items when attached to shoes. There are only a limited number of these sales, however.

The new ceilings for shoe repair shops on men's brown half heels attached are 45 to 50 cents a pair, depending on the quality of the heel. They are 45 to 50 cents a pair for women's brown cuban heels attached, from 25 to 35 cents a pair for women's brown top lifts attached, and from 45 to 60 cents a pair for boys' brown whole heels attached.

Shoe repair shops already have specific ceilings for black synthetic rubber heels attached, which remain unchanged. For men's black half heels attached, the already existing ceilings range from 40 to 55 cents, being five cents a pair under the ceilings now set for similar brown half heels.

Representative members of the wholesale and retail shoe repair trade, and the Rubber Heel and Sole Manufacturers' Industry Advisory Committee, were consulted by OPA. The shoe repairmen consulted approved of the action. The manufacturers requested a 28 per cent increase over March 1942 levels for brown heels and soles, but OPA studies showed that a 20 per cent increase was sufficient.

Prices Set for "Junior" Heels

Simultaneously with the price action recorded above, OPA issued Amendment No. 10 to M.P.R. 477 (Sales of Rubber Heels and Soles in the Shoe Factory and Home Replacement Sales), which establishes ceiling prices on 15 sizes of half-inch brown synthetic rubber heels used on boys' shoes. These heels, generally referred to in the trade as "junior" heels, are sold to shoe manufacturers for placement on new shoes and are not sold separately to the public.

The ceilings for the "junior" heels, which range from $4.10 to $10.00 per 100 pairs, depending on grade and size, are supplementary to a list of ceilings announced by OPA on November 3, 1944, for other sizes and grades of heels sold in the shoe factory trade. They are in line with previous price levels and are mainly for sizes in two grades.

SCRAP RUBBER

Existing ceiling prices for scrap tires, for mixed lots of scrap and repairable tires, and for miscellaneous scrap rubber that includes any scrap tires, have been extended to cover sales to all persons. Formerly these ceilings applied only to sales to industrial consumers.

This extension, achieved in Amendment No. 12 to R.P.S. 87 (Scrap Rubber) and Order No. 33 under Supplementary Order No. 94 (Special Maximum Prices for Scrap Whole Pneumatic Tire Casings), both effective March 10, applies chiefly to sales of these items by dealers in scrap tires and dealers in used tires. The sales are generally made to other dealers and to reclaimers, and not made as a rule to the general public. Heretofore, sales other than to industrial consumers were exempt from price control. The ceilings are on a delivered basis for civilian sales and are f.o.b. shipping point for sales by the Army, Navy and the Procurement Division of the Treasury Department.

The extension, made after consulta-

VIEW OF THE 200-ACRE KOBUTA PLANT IN BEAVER VALLEY

Some idea of the size of the Kobuta plant, which produces both butadiene and styrene for the government's synthetic rubber program, can be had from this partial view of the plant. Located in the Beaver Valley, some 25 miles from Pittsburgh, Kobuta covers 200 acres and is operated by the Butadiene Division of the Koppers Co., Inc.

tion with leading scrap rubber dealers and with the Reclaimed Rubber Manufacturers' Industry Advisory Committee, will strengthen OPA's control over used and repairable tire prices at the wholesale level. Owing to the scarcity of used and repairable tires, prices that have been paid in recent months have exerted pressure on retail ceilings for used tires, OPA said.

The extended ceilings for scrap tires, as well as for mixed lots of scrap and repairable tires, range from $14.00 to $20.00 a short ton, depending on the delivery location in the case of civilian sales, and the shipping point in the case of Army, Navy or Treasury Procurement sales. A uniform ceiling of $15 a ton delivered applies to sales of miscellaneous scrap rubber that includes any scrap tires.

The ceilings for mixed lots of scrap and repairable tires are the same as those for scrap tires. Dealers who wish to obtain the higher prices for repairable tires that are allowed under the repairable tire regulation must segregate and sell them separately.

MISCELLANEOUS ORDERS

The following price and production regulations have also been issued:

Cost-plus pricing for four companies producing ethyl alcohol from grain and molasses during the period February 15 to March 17, 1945, for sales to the Defense Supplies Corporation, have been provided in Amendment No. 11 to M.P.R. 28. Companies affected are DuPont, U. S. Industrial Chemical, Publicker Commercial Alcohol, and Pennsylvania Alcohol & Chemical.

New wholesale and retail ceilings for the 24 x 2.125 size bicycle tire sold by the Atlas Supply Co. are provided in Amendment No. 7 to M.P.R. 435 (New Bicycle Tires and Tubes). The amendment also changes the definition of a balloon tire to "any tire of one of the following sizes: 20 x 2.125, 24 x 2.125, 26 x 2.125, or 26 x 2.25."

Order 30 to M.P.R. 528 (Tires and Tubes, etc.) establishes various prices for the Life-Guard special purpose tubes of the Goodyear Tire & Rubber Co. Order 31 to the same regulation establishes prices for solid industrial tires and retreads.

WPB has made it clear that permission to manufacture items of farm equipment requiring rubber tires mounted on wheel rims of specified sizes does not include permission to use automotive-type tires. Amendment No. 4 to L-257 specifies that producers may not acquire automotive-type tires for the purpose of mounting them on such items, and that they may not use such tires for this purpose unless they were in inventory or in transit on or before January 15, 1945.

Ethyl ether has been placed under the control of Schedule 91 of Order M-300, the general chemicals allocation order. According to the provisions of the order, ethyl ether produced in any government-owned smokeless powder or synthetic rubber plant, and which is delivered to or consumed by any such plant, is exempt from the restrictions on use and delivery.

Amendment No. 18 to M.P.R. 200 (Rubber Heels in the Shoe Repair Trade), issued February 9 and effective February 14, adds one of the heel brands of the I.T.S. Company to those already covered by the regulation.

A maximum price of $17.50 a ton, f.o.b. Zurich, Calif., has been established for a select grade of crude talc produced in Esmeralda County, Nevada. The grade to which the new price applies is described as a superior talc conforming to more rigid specifications than those for which maximum prices were originally established. The price was set in Amendment No. 71 to Order A-1 under M.P.R. 188.

LIMITED PRODUCTION OF CIVILIAN PASSENGER TIRES TO BE CONTINUED

According to an announcement made by the WPB Rubber Bureau on March 7, the freeze limiting production of civilian passenger car tires to approximately 5,000,000 during the first quarter of 1945 will be continued indefinitely, pending clarification of the impact of the shortages of carbon black and tire cord on future passenger tire output. The limitation was originally established as a temporary measure on December 23, 1944. Extension of the limitation took the form of an amendment to Rubber Order R-1, as reported elsewhere in this issue. The continued freeze affects motorcycle and bicycle tires, as well as passenger car tires.

A further result of the carbon black, tire cord and other shortages, was evidenced on March 9 when Col. J. Monroe Johnson, director of the Office of Defense Transportation, announced a 50% cut in the number of heavy-duty tires allocated to meet essential commercial motor vehicle requirements for the second quarter of the year.

As claimant agency for civilian transportation, the ODT requested 2,781,000 truck and bus tires to meet basic requirements for replacement purposes for the April, May and June period. The War Production Board allocated 1,410,000 or 50.7 per cent of the amount requested, leaving a shortage of 1,371,000 tires.

The amount allocated will restrict distribution to a rate of 156,000 tires per month in the sizes 8.25 x 20 and larger and 314,000 tires per month in sizes 7:50 and under. The second quarter total is 431,400 over the first quarter total of 978,600—the larger sized truck and bus tires being available at the rate of 110,200 a month and smaller sized tires at the rate of 216,000 a month.

Colonel Johnson warned truck and bus operators that the seasonal increase provides no basis for being optimistic about any improvement or easement in the availability of heavy duty tires compared with commercial motor vehicle needs. He pointed out that during summer months tire wear and tear is twice as great as it is in winter weather. "Moreover," he said, "synthetic rubber tires do not give the mileage and service formerly obtained from crude rubber tires. Estimates vary but the general consensus is that synthetic heavy duty tires at present give no more than 75 to 80 per cent of the wear and mileage of natural rubber tires."

Proportionate Requirements

The number of tires received for the second quarter, Col. Johnson emphasized, is proportionately less in relation to requirements than the smaller amount received for the first quarter. The total received for the first quarter, 978,600, amounted to 57.5 per cent of the first quarter requirement estimate of 1,722,000.

"By comparing the relative percentages received, 57.5 per cent for the first quarter and 50.7 per cent for the second quarter," Col. Johnson said, "it is apparent that the second quarter deficiency is relatively greater than the first quarter deficiency, although numerically more tires were allotted for the second quarter.

"Furthermore we will enter the third quarter with a shortage of 1,371,000 truck and bus tires so far as meeting the tire needs of essential commercial motor vehicle operators is concerned. This figure is two and a half times as large as the present shortage of 519,000 truck and bus tires and does not include the tire needs for non-essential operations such as the delivery of beverages, retail items other than certain necessary items of fuel and food and circuses, carnivals and other non-essential operators ineligible for new tires.

"It is estimated that these presently ineligible operators need some 681,000 new tires, which amounts to an over-all shortage for all commercial vehicle operators of 2,052,000 tires. In other words, by mid-summer an average of two out of five commercial motor vehicles will be in need of at least one new tire, thereby greatly increasing the need for tire care, recapping and retreading."

WPB also allocated to ODT sufficient truck and bus tires to equip new commercial motor vehicles to be constructed during the second quarter. The amount will total about 345,000, depending on the number of vehicles produced. The first quarter total for new vehicles amounts to approximately 325,000 truck and bus tires.

Warns of Serious Breakdown

Earlier, on February 23, Col. Johnson warned motorists, farmers and truck and bus operators that appeals to retread, recap and repair every worn and usable tire cannot go unheeded if the nation is to avoid a serious breakdown of rubber-

borne transportation during the coming summer. Stating that the nation is living "far beyond its income" and using up its inventory as well so far as tire consumption is concerned, he added that "we are like a family going steadily into debt, hoping against hope that things will take a turn for the better before the sheriff shows up with a foreclosure notice."

In issuing this warning, the ODT director pointed out that we entered the first quarter of the year with a deficit in all types of tires, the figures for truck and bus tires alone being sizeable, *i.e.,* 327,000 on sizes 7:50 and under and 192,000 in sizes 8:25 x 20 and larger. This total of over half a million, which does not include passenger tires, will be considerably larger before the summer months come when tire wear and tear exceeds anything experienced in cold weather. The deficit, it was emphasized, does not represent unissued certificates in the tire sizes mentioned.

Col. Johnson also pointed out that military demands for tires have been heavily stepped up as a result of battlefield experience in which tire consumption has exceeded previous liberal estimates of battle wear and tear. He said: "These increased military demands have reduced the number of tires which can be released for civilian uses. During March the number of small truck and bus tires, sizes 7.50 and under being released, totals 216,000, twenty-eight per cent below the average for the last six months of 1944, 301,666. The number of heavy truck and bus tires, sizes 8.25 x 20 and larger, is about the same as the six months' average, 110,000 for March as compared with the six months' average of 109,500."

On February 19 ODT issued an announcement to the effect that failure of commercial vehicle operators to comply with regulations requiring periodic tire inspections will adversely affect the claims of such operators for new tires. Truck, bus and taxicab operators were reminded that General Order ODT 21-A requires all commercial vehicle operators to have their tires checked after each 5,000 miles of operation or after every six months of operation if mileage is under 5,000 in that period. It was pointed out that the recent OPA action lifting this requirement for passenger car tires in no way affects compliance with ODT tire inspection requirements.

Tire Quotas for March

Passenger car tire quotas for March will be the same as those for February, it was announced on February 27. Since production of passenger tires in the first quarter was limited to 5,000,000 tires through specific authorizations of cotton tire cord for such tires to each tire manufacturer, and since 3,400,000 such tires were allocated in January and February, OPA was restricted to an allocation of 1,600,000 such tires for March, thus bringing the three month total of these tires to the limited 5,000,000.

March tire quotas for trucks and buses, and for farm tractors and implements, also remain at the February figures, *i.e.,* 216,000 truck and bus tires size 7.50 or smaller and 110,200 for size 8.25 or larger, and 50,000 tractor-implement tires size 7.50 or smaller and 21,000 for sizes larger than 7.50.

In issuing the March quota figures, OPA warned that there may be no increases in quotas for passenger tires in the spring-summer period when consumer demand for such tires rises sharply, and that while quota expansions in that period might be made in both truck-bus and tractor-implement tires the large anticipated demand for such tires will probably exceed any quota increase.

Amendments to Ration Order

Two additional amendments to Ration Order 1A (Tires, Tubes, Recapping and Camelback) have been issued since our last report, as follows:

Amendment No. 93, issued and effective February 24, states that manufacturers will no longer be allowed to transfer truck tires to dealers without transfer of certificates.

Amendment No. 94, issued March 8 and effective March 12, classifies tires treated similarly under the rationing regulation as either Grade I, Grade II or Grade III. Grade I tires now consist of all rationed tires which are allocated under specific quotas; Grade II tires are those rationed by issuance of ration certificates but on which there is no quota control; and Grade III consists of tires which are not rationed.

Navy Class B Tires

Ceiling prices for used Navy Class B tires sold by the Procurement Division of the Treasury Department for civilian use have been established in Revised Order No. 12 under Supplementary Order 94 (Sales of Government Agencies and Resales by Certain Buyers on all Commodities except Food). These tires are unfit for military use but will give limited service on civilian vehicles.

The new ceilings, effective February 14, are the same as those recently set for used Army C-1 tires, *i.e.,* $30.00 per ton, f.o.b. shipping point, on sales by Treasury Procurement to manufacturers and $40.00 per ton, f.o.b. destination, on sales by manufacturers to dealers. Manufacturers are expected to sell these tires to dealers, recappers and vulcanizers for repair and resale to the public.

Firestone Completes Laboratory

Completion of what is described as the largest and most advanced research laboratory ever created for the development of improved tires and other rubber and plastic products has been announced by the Firestone Tire & Rubber Co., Akron. Built under the personal supervision of John W. Thomas, chairman of the company, the laboratory represents a cost of $2,000,000. It is completely air conditioned and has prefabricated steel inner walls and partitions which can be moved to completely rearrange the interior of the building. Distilled water from taps, steam, vacuum action, compressed air, and a wide variety of a.c. and d.c. electrical currents are some of the service units installed in each research room. Constant temperature and humidity control has been arranged for an infra-red room, an electric measurements room, and a physical testing room. There is also a large library and an outdoor aging laboratory. Included among special equipment is an electronic microscope which magnifies 20,000 times, X-ray diffraction apparatus, and a quartz spectrograph. Formal dedication of the new laboratory will be held in May.

Interstate Welding Incorporates

The Interstate Welding Service, 914 Miami St., Akron, repairers of Banbury mixers and fabricators of welded metal parts, was recently incorporated for $150,000. The company was formerly operated under the individual proprietorship of G. A. McLean.

Chittenden Named Factory Manager

Dr. F. D. Chittenden has been appointed to the newly-created position of factory manager of the synthetic rubber plant which the U. S. Rubber Co. operates for the government at Naugatuck, Conn. Previously the plant had been under joint management with the Naugatuck chemical and reclaim plants. Dr. Chittenden was born in New Haven, Conn., where he attended the public schools and Yale University. In 1926 he became associated with U. S. Rubber as a chemist in the general laboratories, then located in New York City. In 1931 he was transferred to the development department of the Providence, R. I., plant, and in 1942 he came to Naugatuck in connection with the building and operation of the synthetic rubber plant. In 1943 he was made chief chemist of the copolymer plant, at Institute, W. Va., of which he later became technical superintendent. Last September he returned to Naugatuck as a member of the technical coordination staff of U.S. Rubber's synthetic rubber division.

Dunne Rubber Suffers Fire

Approximately one quarter of the 30,000-square foot plant of the Dunne Rubber Co., at Ashtabula, Ohio, was damaged by fire on February 12, including finishing and shipping departments, laboratory, and offices. Temporary facilities were set up immediately, and work was begun to repair the damage, estimated at between $10,000 and $15,000. The plant employs 125 persons and is engaged wholly in war production.

PREDICTS CRUDE SHIPMENTS 3 MONTHS AFTER LIBERATION

A prediction that natural rubber will again be exported from the Netherlands Indies three months after the liberation of that country was made by Dr. Pieter Honig, internationally-known rubber expert and director of the Netherlands Indies Rubber Research Institute, in a statement issued last month. At the same time he voiced hearty support of synthetic rubber development in time of peace as well as in war.

Dr. Honig recently returned to New York after flying to Australia and parts of the Netherlands Indies to organize rubber reconstruction. Prior to the war, the Indies produced approximately 45 per cent of the world's rubber. With four and one-half to five million acres planted in rubber and with about 400 trees to each acre, Dr. Honig believes that possible war destruction in the Indies will not long prevent his country from producing nearly half of the world's natural supply.

"I know that many persons devoted to 'natural' products fear the advent of synthetics, but we of the Indies frankly do not," Dr. Honig says with confidence. "We believe that in the world's present state of rubber depletion, requirements for postwar replacements added to many newly developed uses for rubber will require high production of both natural and synthetic products."

Temporary Control is Planned

A new N.I. government-controlled organization will soon be put in temporary control of the production and trade of rubber in liberated parts of the Indies, according to Dr. Honig, who adds that the new group will be known as the "Rubber Centrale" and will be managed by a board of directors representing several important pre-war N.I. rubber industries and associations. Private enterprise free of any governmental control will be re-established as quickly as possible.

"Fifteen million dollars worth of rubber producing equipment, representing about 25 per cent of what is normally required, has been purchased in the United States," Dr. Honig says. "The Netherlands Indies Government's relief purchases have been and will be financed out of its own funds. Our basic governmental policy is to provide the means, through soundly financed loans, to restore, not normalcy, but a condition where the population can help itself achieve it. We don't think the United States or anyone else should be expected to play Santa Claus to us."

The tools bought in America to help re-establish rubber production in the Indies will be equally distributed between native growers and those plantations managed by Western peoples. Through the work of the Netherlands Indies Rubber Research Institute and other persons and groups, cost of natural rubber is expected to be substantially reduced by greater selectivity in tree planting and tapping, as well as in higher overall production.

"In 1910, the Netherlands Indies produced only 1,000 tons of rubber," Dr. Honig says. "But by 1939, we were producing at the rate of 383,000 tons per year. By 1955, I think we shall see a production increase of 200 per cent over, say, our 1920 base. Putting it differently, I believe we may expect that rubber production shortly after this war will be three times greater than it was after World War I."

Dr. Honig believes that the elastic properties of rubber have too often in the past been applied to prices for the product. He expects the synthetic program to help stabilize the rubber market, while better standardization of both natural and synthetic rubber will help manufacturers to find many new uses for it.

Unable to divulge for military reasons what he saw in flights over both occupied and liberated parts of the Netherlands Indies, he is obviously hopeful concerning early resumption of rubber exports following liberation. Extensive plans are already complete for quickly supplmenting the present costly, war-emergency production of synthetic rubber and, in peace-time, helping produce a better product more cheaply.

Most persons have associated rubber almost exclusively with automobile tires, Dr. Honig believes, adding that postwar uses of the product will amaze the world. He thinks that in newly developed applications of sponge rubber alone, there will be an annual increase in rubber consumption of 200,000 tons spread over the decade following the war.

Coming Events

Mar. 23. Chicago Rubber Group, Morrison Hotel, Chicago, Ill.

Mar. 30. Rhode Island Rubber Club, Crown Hotel, Providence, R. I.

Apr. 3. Los Angeles Rubber Group, Mayfair Hotel, Los Angeles, Cal.

Apr. 6. Boston Rubber Group, Hotel Vendome, Boston, Mass.

Apr. 13. New York Rubber Group, Building Trades Club, New York, N. Y.

Apr. 13. Montreal Rubber & Plastics Group, Ritz-Carlton Hotel, Montreal, Canada.

Apr. 26. Ontario Rubber Group, Toronto, Ontario, Canada.

May 18. Chicago Rubber Group, Morrison Hotel, Chicago, Ill.

June 18-22. A.S.T.M. Annual Meeting, Hotel Statler, Buffalo, N. Y.

Sept. 10-14. American Chemical Society, Annual Meeting, Chicago, Ill.

NEWMAN LAUDS SYNTHETICS IN MEMPHIS, TENN., TALK

American scientists, engineers and production men have achieved in five years with synthetic rubber what it took nearly 70 years to accomplish with natural rubber, according to a talk made in Memphis, Tenn., on February 20, by James J. Newman, vice-president of the B. F. Goodrich Co., Akron.

According to Mr. Newman, the ability to use American synthetic rubber for all essential war products, and in such volume that it now constitutes 85% of the overall volume of rubber the United States is using, has been a life-saver, for "today we are nearer the bottom of the natural rubber barrel than we have ever been, with military requirements continuing to mount as our active war front widens and supply lines lengthen."

The Goodrich executive traced the "overnight" evolution of tire-type synthetic rubber from its 6,000 tons—less than one per cent of total consumption—in 1941, to the 565,000 tons actually consumed in 1944. Production for 1944 exceeded 750,000 tons. Synthetic is used up to 100% in many war products seeing the most rugged service, including De-Icers, fuel cells, pontons, boots, foul weather clothing, plasma tubing, diaphragms and hose of all kinds, he said. Only one type of military tire is still made with 100% natural rubber, and the overall tire average is 86% synthetic.

It is impossible now to foresee the ultimate "balance of power" between natural and synthetic rubber, in view of the changing costs and techniques, Mr. Newman said. But, he added, "the most reassuring fact, and one that we can depend on, is that America's performance in creating and using synthetic rubber has provided an effective ceiling over future raw rubber costs—which is important to the goals we all are seeking, of more and better products, wider markets, and more jobs."

Aggressive, well-planned selling in the immediate post-war period is also essential if the country is to "keep on clicking in high gear after the guns cease firing," Mr. Newman said. He warned that the advent of peace might find the nation on an "economic dead center" in which a large part of the much-discussed backlog of demand would be frozen by a fear psychology based on the automatic ending of millions of war jobs, and that it will take "a tremendous sales job, using the best selling and advertising brains of the nation, to sell that large segment of the country on a 'go ahead' spirit instead of a 'wait and see' policy."

The speaker said "we must face the fact that the impact of peace may be a severe economic shock, and if a hesitant, fear psychology is allowed to prevail, millions of potential buyers of major mechanical goods, autos and even houses would be 'sweating out' the recession—marking time, naturally wanting to be assured of their economic future before spending their war-earned savings."

PHILADELPHIA RUBBER GROUP HOLDS INAUGURAL MEETING

The newly-organized Philadelphia Rubber Group held its first formal meeting at the Benjamin Franklin Hotel, in Philadelphia, Penna., on March 9. It was an auspicious beginning for the group, attracting an attendance of 226. The meeting featured dinner, entertainment, a brief business session, and a talk by Dr. A. A. Somerville, vice-president of the R. T. Vanderbilt Co. Preceding the dinner, a cocktail party was held in the hotel by the Vanderbilt company.

The meeting got under way immediately following dinner. R. S. Hanslick (Quaker Rubber), who was named chairman of the group at the organizational meeting held by representatives of some twenty companies in Philadelphia on January 10, formally opened the ceremonies by introducing his co-officers, including W. B. Munroe (Linear Packing), vice-chairman; L. H. Youse (Gilmer), treasurer; and J. A. Popp, Jr. (Shell Oil), secretary.

Describes Organization of Group

Mr. Popp then took the floor and briefly traced events leading to the organization of the new group. He told of the organizational meeting and the appointment of an Executive Committee which, in time, will draw up a constitution and by-laws for the group, largely patterned after those of other rubber groups. He said it had also been decided to hold meetings every three months or so. The Executive Committee consists of Messrs. Hanslick, Munroe, Youse and Popp, and Paul Hopkins (Lee Rubber), W. Dunlap (Lee Rubber), E. E. Zeilstra (Roebling), W. F. Wedemeyer (de Sanno), and B. F. Benson (Goodrich).

The secretary also stated that the financial position of the group was already in excellent shape, due to contributions solicited and received from the following concerns: L. Albert & Son, Associated Rubber Products, Bloomingdale Rubber Co., A. P. de Sanno & Son, DuPont, Electric Hose & Rubber Co., L. H. Gilmer Co., B. F. Goodrich Co., Hamilton Laboratories, Hercules Powder Co., Lee Tire & Rubber Co., MacEwan & Smith, Monsanto Chemical Co., Quaker Rubber Co., H. N. Richards Co., H. M. Royal, Inc., Sharples Chemicals, Inc., Thiokol Corp., Vulcanized Rubber Co., Walker Brothers, West Co., Wilmington Chemical Co.

It was also revealed during the business session that the group was planning to hold an outing late in the summer and that a nominating committee will be named at the next meeting, which will probably be held early in June, to suggest a slate of officers for next season, with elections to be held at the Fall or Winter meeting. Chairman Hanslick also stated that a total of 180 members paid their dues during the course of the meeting.

Prior to the introduction of the featured speaker, some unusual entertainment was furnished in the form of a combination magic and mind reading act by "Doc" Irving, noted performer of the Million Dollar Pier at Atlantic City, and his female assistant. Following this, Mr. Hanslick introduced Dr. Somerville, first giving one or two anecdotes concerned with the speaker's college days and early work in the rubber field.

Before launching into his scheduled talk on "Getting Technical Work Done," Dr. Somerville called for and received a round of applause for the brilliant work being done by American boys on the battlefronts, as reflected in current headlines. He then stated that it was most appropriate for Philadelphia to have its own rubber group, since the Division of Rubber Chemistry of the American Society was organized in the Quaker City in 1919. He also reminisced on the initial meeting of the New York Rubber Group in 1928.

Dr. Somerville's formal talk consisted of a number of observations on methods of getting technical work done. He said that brevity was an important factor in writing technical reports, letters, making telephone calls, and the like, and stressed the importance of being alert and on the job at all times. Personal anecdotes were sprinkled throughout his talk.

The elimination of petty jealousies in technical organizations is also of importance, according to the speaker, since technical progress is considerably impeded when such jealousies are apparent. In this connection Dr. Somerville referred to one of his observations which appeared in *Vanderbilt News* some time ago, namely, "Please the boss, and if you can't please the boss please quit."

Continuing his observations, Dr. Somerville said that technical work should be done in the same manner that a surgeon approaches his task—quickly, efficiently and consistently. As for reasons for doing technical work at all, he said there was an element of personal satisfaction in doing creative work that cannot compare with methods of depending solely on the other fellow's work.

In concluding his talk, Dr. Somerville said that attention must be paid in the future to methods of cleaning up both the factory and the laboratory. He referred to the pelletizing of carbon black as one big development in this direction, and said that the elimination of dust from organic materials was logically the next step. Accelerators and other compounding ingredients should be pelletized, with some binder added to hold the pellets together efficiently, he said, and as proof that such methods are possible he exhibited samples of a copper accelerator in both its present and pelletized form. Methods of pelletizing its various materials, according to the speaker, are now being worked out by Vanderbilt.

Introduce New Solvent Adhesive

Ubapol, reported to be a completely new solvent adhesive that matches rubber cement quality for quality, has been developed and introduced by the Union Bay State Chemical Co., Cambridge 42, Mass. The new cement utilizes synthetic rubber and is compounded from a new base developed exclusively for cement purposes. Ubapol is said to be non-penetrating and stays on the surface on porous fabrics.

Officers of the Philadelphia Rubber Group and guests seated at the head table at the group's inaugural meeting at the Benjamin Franklin Hotel in Philadelphia on March 9. Left to right: W. B. Munroe (Linear Packing), vice-chairman; John Popp, Jr. (Shell Oil), secretary; Dr. A. A. Somerville (Vanderbilt), guest speaker; R. S. Hanslick (Quaker Rubber), chairman; Ernest Bridgwater (DuPont); Walter Geldard (Naugatuck Chemical); and L. H. Youse (Gilmer), treasurer.

POST-WAR STATUS OF PLANTS DISCUSSED BY DR. DINSMORE

Most of the wartime capacity of the American synthetic rubber plants can be kept busy in the production of needed rubber and plastics in the post-war period by research and intelligent planning, Dr. R. P. Dinsmore, vice-president in charge of research and development of the Goodyear Tire & Rubber Co., said on March 9 in an address before the California Section of the American Chemical Society in Los Angeles.

According to Dr. Dinsmore, a substantial portion of existing capacity, perhaps 50%, will be needed for synthetic rubber even after natural rubber becomes available, and possibly half of the remaining surplus can be utilized in the plastic field.

Pointing out that the government now has nearly $700,000,000 invested in plant facilities of all types for the production of synthetic rubber, the Goodyear research executive estimated that by 1948 or 1949 from 50 to 60% of the plant capacity would not be needed for copolymerization purposes, and added that with only slight changes such surplus equipment could be adapted to the emulsion polymerization of a number of plastics, particularly the vinyl chloride polymers and copolymers which are steadily growing in popularity and usefulness.

Outlines Synthetic Prospects

At the same time, however, Dr. Dinsmore emphasized the importance of a flourishing synthetic rubber industry for the United States. He termed that industry as one of "respectable magnitude" and since it is a vital factor in our national defense we should do all we can to preserve and foster it. He said that prospects of the synthetic rubber industry for a 50% competition with natural rubber seem good, based on present quality and present most favorable cost, but indicated that "both the cost and the quality need our devoted attention."

Pointing out that the government investment in the synthetic rubber industry was divided into 57½% for butadiene plants, 13.7% for styrene plants, 27% for the copolymerization plants, and the remaining small percentage for miscellaneous chemicals, Dr. Dinsmore stated that certain features of the copolymer plants are basic and cannot be altered greatly without fundamental changes in the plant and its equipment.

Continuing this theme, he pointed out that the plants are designed to store and handle volatile and rather unstable chemicals, to carry out pressure reactions in water emulsions, to coagulate or salt out in acid medium a porous, organic lump which is partly de-watered by vacuum filters and finally dried in continuous apron, hot-air dryers, and there is provision for flash evaporation and compression of low-boiling liquids and vacuum evaporation and condensation of higher-boiling liquids.

These features, the speaker said, should determine the kind of products which could reasonably be made in such a plant and it does not seem feasible to employ a process which does not utilize a water emulsion reaction or something which closely resembles it. The largest class of plastics to which emulsion polymerization has been applied are the vinyl chloride polymers and copolymers, which now represent a productive capacity of 60,000 to 75,000 tons per year.

Decries Carbon Black Shortage

In opening his talk, Dr. Dinsmore referred to the current shortage of carbon black. "This is one of the most inexcusable shortages of the war," he said. "Its approach has been predicted by the rubber industry for over a year and it has always been apparent that carbon black manufacture was not in balance with the synthetic rubber capacity. Because of failure of the government to move in time the civilian tire shortage will be more acute and the military tire supply may suffer."

Bacon to Represent Hall

Wendell E. Bacon

Wendell E. Bacon, who has been connected with the Firestone Tire & Rubber Co., V. L. Smithers, Inc., the C. F. Church Mfg. Co., and the U. S. Rubber Co. in the past, has been appointed New England and Eastern representative of the C. P. Hall Co., Akron. A graduate of the University of Chicago, Mr. Bacon also attended the Aberdeen, S. D., Northern State Teachers' College, the University of Akron, and the Massachusetts Institute of Technology. He is a member of the American Chemical Society and the Chemists' Club of New York and has been associated with the rubber and allied industries for twenty years. During World War I Mr. Bacon served overseas for approximately eighteen months.

MOVIES AND HUMOR FEATURE LOS ANGELES GROUP MEETING

Two excellent movies and a clever humorist featured the regular monthly meeting of the Los Angeles Rubber Group, Inc., held at the Mayfair Hotel in Los Angeles on March 6. It was one of the largest meetings of the year, with approximately 155 members and guests in attendance.

Following the presentation of "The Amazon Awakens," an animated color film which portrays life along the Amazon and its tributaries, and a good portion of which is devoted to the Ford rubber plantation located on the Tapajoz River, Chester Gruber, noted humorist and news commentator, was introduced under the name of "Juan X. Perez." Representing himself as a Brazilian newspaper publisher and prominent industrialist, and using a strong Brazilian accent, "Senor Perez" gave a brief discourse on rubber in his "native" land. The hoax was continued until, in response to an encore, Mr. Gruber spoke in perfect English and launched into a series of anecdotes which delighted his listeners. A film depicting the Canadian Rockies was also shown.

A number of prizes were made available at the meeting through the courtesy of the C. P. Hall Co., the Monsanto Chemical Co. (through Charles Fetzner, representative), the Braun Corp., and DuPont (through Herman Jordan, representative). Winners included James Arnold, Art Wolff, Bob Short, Walter King, Alan Moore, F. H. Banbury, Charley Roese, Monty Montgomery, Bob Abbott, Charles Fetzner, George Green, Paul Wineman and Glenn Goes.

During the course of the meeting it was announced that the new year book of the group, which Chairman Hutchinson had expected to be able to distribute at the meeting, had been delayed in print, but that it would be ready for distribution at the next meeting, on April 3, without fail. It was also announced that a golf tournament would be held at the Midwick Country Club on March 17.

Farrel Buys Atwood Co.

The Farrel-Birmingham Co., Inc., Ansonia, Conn., recently bought the plant and business of the Atwood Machine Co., Stonington, Conn., manufacturers of textile machinery. The sale followed a vote of the Atwood stockholders, taken on February 15; the transfer will be effected on April 2. Franklin R. Hoadley, president and treasurer of Atwood for the past eight years, has been elected president of Farrel-Birmingham and W. M. Fraser, vice-president of Atwood, has been made general manager of the Atwood plant. Farrel-Birmingham will continue to build Atwood textile machinery at the Stonington plant, and will maintain the engineering, production and sales services of Atwood's 93-year-old organization.

DISCUSSION OF PLASTICIZERS FEATURES MONTREAL MEETING

William Woodcock, of the Fine Chemicals Division, Carbide & Carbon Chemicals Corp., New York City, was the principal speaker at the regular meeting of the Rubber and Plastics Division, Montreal Section, Society of Chemical Industry, held at the Ritz-Carlton Hotel in Montreal, Canada, on February 9. Mr. Woodcock discussed "Plasticizers."

The speaker dealt with the subject of plasticizers in both their theoretical aspects as well as practical applications. He expounded a theory of plasticizer action that is becoming more widely held; namely, that the effectiveness of a plasticizer with a resin depends upon the relative strength of the polar attractive forces between resin and plasticizer opposed to the intramolecular attractive forces of each of the two materials.

The properties desired of a perfect plasticizer were listed and the discussion from then on dealt with the selection of a proper plasticizer to most satisfactorily supply the properties required in the finished product as it is impossible to find any one compound that gives perfect results. Mr. Woodcock limited himself to discussing monomeric plasticizers of the ester type and illustrated how the selection of the proper plasticizer for low temperature flexibility of polyvinyl chloride would be carried out. Mention of the effect of the use of these ester plasticizers on synthetic rubber was made and it was shown how the desirability of the properties they conferred on the stock led to their use for certain applications over the commoner and cheaper softeners more usually employed in rubber compounding.

The usual dinner preceded the meeting and after the completion of the address an open discussion took place upon the question as to whether or not this group would continue as an independent body or become a section of the Chemical Institute of Canada. A questionnaire is to be prepared and submitted to all the members.

Chicago Meets on March 23

The next meeting of the Chicago Rubber Group will be held in the Morrison Hotel in Chicago on Friday, March 23. Two technical papers will be presented, one on "Mold Manufacturing Methods," by S. O. Black and I. W. Robinson, of the Dryden Rubber Co., and the other on "Polyester-Type Resins in the Rubber Industry," by Dr. Frederick J. Myers, of the Resinous Products and Chemicals Co. In keeping with the wishes of the War Committee on Conventions, the meeting is limited to members of the Chicago Rubber Group who live in the immediate Chicago area, and members outside of that area are requested to refrain from attending the meeting unless other business brings them to Chicago the day of the meeting.

Returns to Naugatuck Chemical

H. B. "Hap" Morris

Harold B. "Hap" Morris, who has been returned to inactive reserve status from a captaincy in Chemical Warfare Service after three years of service, has been appointed technical representative of the Naugatuck Chemical Division of the U. S. Rubber Co. and Dispersions Process, Inc., in the Akron, Ohio, area. The territory for which Mr. Morris will be responsible includes the states of Ohio, Indiana, Kansas, Kentucky, West Virginia, Tennessee, and the cities of Buffalo and Pittsburgh. Born in Youngstown, Ohio, Mr. Morris attended the local grammar and preparatory schools, and was graduated with a B. S. degree in chemistry at Gettysburg in 1930. Following this he completed his scientific education at the University of Akron. Before enlisting in C.W.S., Mr. Morris had had engineering technical sales experience in the use of latex and rubber dispersions with leading rubber manufacturers, including U. S. Rubber.

Ontario Section Meeting

A meeting of the Ontario Rubber Section, preceded by a dinner given jointly with other groups in the Toronto, Ontario, area under auspices of the Chemical Institute of Canada, was scheduled to be held in Toronto on March 13. Dr. J. G. Mark, of the Dewey & Almy Chemical Co., Cambridge, Mass., was to speak on "Tailor-Made Polymers."

Boston Group Meets April 6

The Spring Meeting of the Boston Rubber Group will be held on Friday, April 6, at the Hotel Vendome, Boston. Two technical papers, one on "The Future of Synthetic Resins" and the other on "The Application of Resin-Formers to Fibres and Fabrics," will be presented, both by members of the Monsanto Chemical Co.

NEW YORK GROUP WILL HEAR RECLAIMED RUBBER SYMPOSIUM

The Symposium on Reclaimed Rubber, which was originally scheduled to be presented at the February 2 meeting of the Chicago Rubber Group, but which was called off after the cancellation of that meeting, will be presented at the next meeting of the New York Rubber Group, which will be held on Friday, April 13, at the Building Trades Club in New York. The Symposium will be held at an afternoon session, beginning at 4:30 P.M. In addition, the meeting will feature "Highballing to Victory," the War Department sound film portraying the importance of tires and other rubber products to the fighting fronts.

The Symposium will consist of the three originally scheduled papers, as follows: *Technical Problems in Connection with Reclaiming Synthetic Rubber,* by Fred S. Conover, of the Naugatuck Chemical Division of the U. S. Rubber Co.; *Compounding Problems with Synthetic Reclaims,* by Earl S. Busenburg, of the Philadelphia Rubber Works; and *Economic Factors Involved in the Transition from Natural Rubber to Synthetic Rubber from the Reclaimers' Standpoint,* by John S. Plumb, of the U. S. Rubber Reclaiming Co. Ample time for floor discussion will be allowed.

Because the capacity of the Building Trades Club is now limited by New York City order, and because of the necessity of determining the total number of members and guests planning to attend, it is suggested that tickets and reservations be secured as soon as possible by writing the present secretary of the group, B. B. Wilson, c/o *India Rubber World,* 386 Fourth Ave., New York 16, N. Y.

Akron Group Hears Sewell

A talk covering experiences on a 35,000 mile USO tour in the China-India-Burma War Theatre, by Luke Sewell, manager of the St. Louis Browns Baseball Club, and sales representative of the Robbins Tire & Rubber Co., featured the regular winter meeting of the Akron Rubber Group, held on February 16, at the Mayflower Hotel in Akron, Ohio. Two hundred and forty-nine members and guests attended the meeting. Two films, "Highballing to Victory," and "Communique 14," furnished by the War Film Service, were shown after Mr. Sewell's talk.

R. I. Rubber Club to Meet

The Rhode Island Rubber Club has scheduled a dinner meeting at the Crown Hotel, Providence, R. I., on March 30. J. Burleigh Cheney, president of the Skyway Corporation, Providence, will give a talk on "Taxi Service by Air," which will be illustrated with a technicolor sound film. Reservations should be made before March 26, as the hotel can accommodate only one hundred.

NAMES IN THE NEWS

STANLEY W. CAYWOOD, general manager of the international division of the B. F. Goodrich Co., Akron, was recently named co-chairman of the committee on light and heavy industry of the China-American Council of Commerce and Industry.

L. H. HANSEL, president of the Felters Co., Boston, has been elected president of the Felt Association, Inc., succeeding J. T. Lawless, who was chosen vice-president.

J. E. FELDMAN, formerly assistant chief chemist of the Dryden Rubber Co., Chicago, and connected with that company for about ten years, is now associated with the Inland Manufacturing Division, General Motors Corp., Dayton, Ohio, in the capacity of senior compounder.

J. W. OSBON, formerly assistant comptroller of the Pittsburgh Plate Glass Co., Pittsburgh, Penna., has joined the Pennsylvania Rubber Co., Jeannette, Penna., as controller.

W. B. MCINTOSH, president of the Pyramid Rubber Co., Ravenna, Ohio, has been appointed chairman of the Social Security Committee of the National Association of Manufacturers.

JOHN GROTZINGER, manager of electrical engineering for the Goodyear Tire & Rubber Co., Akron, conducted a symposium on industrial power applications at a meeting of the Akron Section, American Institute of Electrical Engineers, on February 13.

DR. JOSEPH R. STEVENS, associated with the J. T. Baker Chemical Co., Phillipsburg, N. J., has recently been appointed director of organic research of that company.

GEORGE L. MEYERS, associated with the Ohio Rubber Co., Willoughby, Ohio, since 1933, has been named technical director of research for the company.

EARL W. GLEN, manager of the fabric design department of the Goodyear Tire & Rubber Co., Akron, is now serving with the U. S. Army Ordnance Department as a consultant on matters pertaining to rubber.

DR. GEORGE S. WHITBY, professor of rubber chemistry at the University of Akron, delivered an address on "The Isoprene Motif in Nature" before the Northeastern Ohio Section of the American Chemical Society in Cleveland on February 22.

JOHN L. COLLYER, president of the B. F. Goodrich Co., Akron, has been named an adviser to the Office of the Quartermaster General, Washington, D. C.

JOSEPH C. HUBER, manager of the Goodyear Tire & Rubber Co. plantation in the Philippines, who was captured by the Japs in February, 1942, has been liberated from an enemy prison camp.

A. G. PARTRIDGE, president of the Goodyear Tire & Rubber Company of Canada, Ltd., and L. B. WILLIAMS, chairman of the board of the National City Bank of Cleveland, have been elected to the board of directors of the Goodyear Tire & Rubber Company to replace the late GEORGE MARTIN and FRANCIS SEIBERLING.

DAVID W. BLACK, chief of footwear in the Clothing and Equipage Branch, Storage and Distribution Division, Office of the Quartermaster General, has been promoted to the rank of major in the Quartermaster Corps.

ARTHUR A. HALL, associated with the Norwalk Tire & Rubber Co., Norwalk, Conn., for the past 22 years, most recently as manager of sales, has been assigned to the company's newly-created position of operating manager.

E. C. LEACH, of the General Tire & Rubber Co., Akron, has been elected chairman of the recently organized Tire and Tube Repair Materials Industry Advisory Committee of OPA. G. E. OLIVER, of the Oliver Tire & Rubber Co., Oakland, Calif., was named vice-chairman.

FRED D. BEECHER, connected with the Thermoid Co., Trenton, N. J., since 1928, has been elected a vice-president of that company, and placed in charge of automotive replacement sales, succeeding CHARLES A. KLAUS, recently resigned.

BURT WETHERBEE, manager of technical service of the American Resinous Chemicals Corp., Peabody, Mass., for the past two years, has resigned from that organization. He expects to announce a new connection shortly.

L. G. HUMMEL, secretary of the C. P. Hall Co. in Ohio and California for the past few years, has added the duties of treasurer of both of those concerns. MR. HUMMEL, who joined the chemical sales and manufacturing firm in 1938 as an accountant and office manager, is also secretary-treasurer of the C. P. Hall Co. of Illinois.

J. R. SWEETMAN, who has operated as a research and consulting chemist under the name of Sweetman's Laboratories in Morristown, N. J., for the past two years, has joined the New York Rubber Corporation at Beacon, N. Y., as chief chemist. He was associated with that company from 1920 to 1925 and for many years was chief chemist of the Whippany, N. J., reclaiming plant of the Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.

RAYMOND P. TOWENSEND, connected with the Johns-Manville Sales Corp. since 1925, has been named vice-president and general sales manager of the company's transportation department.

CLARENCE B. MOORE, formerly technical director of the Thermoid Rubber Co., Trenton, N. J., has joined the sales force of Herron Bros. & Meyer, where he will devote his attention to technical sales and product development of rubber compounding materials.

DR. H. L. FISHER, director of organic research of U. S. Industrial Chemicals, Inc., Stamford, Conn., addressed the South Jersey Section of the American Chemical Society on "The Origin and Development of Synthetic Rubbers" on February 20 and the Philadelphia Organic Chemists' Club on "The Chemistry of Vulcanization" on February 28.

HOWARD HOSKINS, assistant comptroller of the Goodyear Tire & Rubber Co., Akron, was recently elected president of the Portage Country Club.

DR. ADDAMS S. MCALLISTER, assistant director of the National Bureau of Standards, in charge of commercial standardization, retired from that position on February 28.

WILLIAM E. IRELAND, associated with the B. F. Goodrich Co., Akron, since 1934, has returned to the company as manager of passenger car tire and tube sales, after serving WPB as chief of the production division on tires and tubes since October, 1943.

B. W. AVALLONE, formerly affiliated with Pratt & Lambert, Inc., was recently elected president of the Jamestown Finishing Products, Inc., of Jamestown, N. Y., manufacturers of wood, metal, cloth and other types of finishing products.

B. R. NEWCOMB, president and general manager of the John Waldron Corp., New Brunswick, N. J., was recently named a member of the Committee of Patents of the National Association of Manufacturers.

ROBERT H. KITTNER, formerly an engineer with the American Hard Rubber Co., has joined the Glenn L. Martin Co., Baltimore, Md., as manager of its newly-created Plastics and Chemicals Division. He will have complete charge of development of Marvinol products.

TIRE PRODUCTION FIGURES GIVEN IN R.M.A. REPORT

With the issuance of "Tires at War," a statistical booklet prepared by the Rubber Manufacturers Association (briefly reviewed in the February, 1945, issue of RUBBER AGE), on February 14, the rubber industry revealed for the first time that over 40,000,000 heavy-duty truck tires have come off production lines since Pearl Harbor. In addition, the report indicated that the tire industry had boosted its production of tires for planes from 33,000 in 1939 to the huge total of 1,417,000 in 1944.

"These facts about tire production to date," said A. L. Viles, R.M.A. president, "give perspective to the challenge which the industry faces today. The War Department asked tire manufacturers last December to increase the production of heavy duty truck tires by 75%. They have accepted this challenge, regardless of cost or effort, and are well on the way to meeting it. Part of the challenge is to the public, however; a challenge to make their present passenger car tires last through careful driving and recapping while the industry concentrates on meeting these new military demands".

The figures show that production of passenger car tires, which had dropped from 50 million in 1941 to 2½ million in 1942, was increased substantially during 1944. Third quarter production was 4,909,000 tires, about a million more than in the second quarter. New war demands for truck tires have now thrown passenger car tire production temporarily into reverse.

Statistics on Camelback

The key role which recapping is playing in keeping civilian cars on the road is shown by the production figures on camelback. In 1941, 75,920,000 pounds of camelback were produced for recappers. Last year the industry produced more than four times that amount.

The figures released by the R.M.A. show that U. S. stocks of crude rubber increased from 125,800 tons at the end of 1939 to a peak of 629,000 tons at the end of the first quarter of 1942. This unprecedented stockpile made it possible to keep our war forces supplied with tires while the new synthetic plants were being built and the industry was learning how to use the new material. By the start of 1943, substantial quantities of synthetic rubber were being used in making tires. In the first quarter of 1943, about twice as much crude rubber as synthetic was used in making tires. The proportion changed thereafter, more and more synthetic being used, until the figures for the third quarter of 1944 show 70,884 tons of synthetic being used as against 18,766 tons of crude.

Though it now costs about 33% more to make and deliver passenger car tires from synthetic rubber, according to the report, price ceilings were established by OPA which set the list on synthetic rubber passenger car tires at less than 9% above pre-war list prices for crude rubber tires. On synthetic rubber truck tires, which now cost about 25% more to make and deliver, retail list prices were frozen by OPA in May, 1944, at the same levels as pre-war crude tires.

An interesting wartime trend in tire production is revealed in the statistics showing the amounts of cotton and rayon used in building tires. Figures for the first quarter of 1942 show 43,631,000 pounds of cotton used and 5,936,000 pounds of rayon. In the third quarter of 1944, 45,240,000 pounds of cotton were consumed and 19,492,000 pounds of rayon.

Hoadley Heads Farrel-Birmingham

Franklin R. Hoadley

Franklin R. Hoadley, who has been associated with the Farrel-Birmingham Co., Inc., Ansonia, Conn., since his graduation from Yale University in 1914, has been elected president of Farrel-Birmingham. During World War I Mr. Hoadley served abroad as a lieutenant in the Ordnance Department. Returning to Farrel-Birmingham in 1918, he became foundry manager in 1919, a director of the company in 1923, and vice-president and a member of the executive committee in 1930. For the past eight years Mr. Hoadley has been president and treasurer of the Atwood Machine Co., Stonington, Conn., which was recently purchased by Farrel-Birmingham (as reported elsewhere in this issue). He will continue general supervision of the Stonington plant and will also assume general management of Farrel's three other plants. Mr. Hoadley is a director of the Southern New England Telephone Co., the Manufacturers Association of Connecticut, and a former president of the Gray Iron Founders Society and the National Founders Association. He is on the board of managers of the Westerly, R. I., branch of the Industrial Trust Co. and is a member of the Governor's Reconversion Committee for the State of Connecticut.

ADVANTAGES OF SYNTHETICS STRESSED IN A.S.M.E. TALK

That synthetic rubber has earned a position as a full fledged engineering material and is here to stay on its own merits rather than as a substitute for natural rubber was the theme of a talk given by E. F. Riesing, chief automotive engineer of the Firestone Industrial Products Co., Detroit, Mich., at a meeting of the Metropolitan Section of the American Society of Mechanical Engineers, held in New York City on February 19. Mr. Riesing spoke on "Synthetic Rubber in Automotive Chassis—Status and Future Possibilities." Approximately 100 members and guests were in attendance.

Mr. Riesing, who is Chairman of the National Division of Rubber and Plastics of the A.S.M.E.; demonstrated in his address the outstanding properties of various synthetic rubbers, using dynamic equipment and apparatus to substantiate the superiority of the synthetics in specific physical properties such as resilience, efficiency, low temperature flexing, low temperature brittleness, high temperature stability, oil resistance, resistance to ultra-violet rays, ozone, acid, gas diffusion, etc.

Practical application data also was presented on the temperature effects of synthetic rubbers studied under wind tunnel conditions, both at high temperatures simulating African desert operation, and at low temperatures similar to Alaskan operations. A type of synthetic rubber, one of the polybutadiene compounds, which will not freeze nor become brittle under sub-stratosphere conditions, was demonstrated with special low temperature equipment. This type of synthetic rubber freezes at —100° F.

Mr. Riesing also made a comparison between synthetic and natural rubbers in a study of static compression and shear modulus, and of dynamic compression and shear modulus. The latter study has been conducted at both low frequencies of natural vibration and at high forced frequencies equal to those encountered in practical mechanical applications. Hysteretic and elastic properties, creep and stress relaxation under load, change of modulus (stiffness) with time at elevated temperatures, also was discussed.

Seeks Agency on Coast

E. L. Burke, who has returned from three years' service as a captain in the army, supervising the allocation and distribution of critical aircraft materials, has established a sales agency under the name of E. L. Burke & Co. at 122 E. 7th St., Los Angeles 14, Calif. Mr. Burke, who for twenty years represented manufacturers in merchandising and distribution prior to the war, is now interested in contacting manufacturers with a view to representing them on the Pacific Coast.

FINANCIAL NEWS

U. S. RUBBER CO. REPORTS NET INCOME OF $15,832,613

United States Rubber Co. reports net income of $15,832,613 for the year of 1944 after all charges, including provision for Federal and foreign income taxes, which after allowing for $8.00 a share on the preferred stock is equal to $6.04 a share on the common stock, and compares with $14,163,554 reported for 1943, or $5.09 a common share.

Consolidated net sales amounted to $443,077,453. This compares with $422,271,343 for 1943, which had been the all-time high up until last year. As in previous years, these sales do not include the substantial volume of production in the munitions and synthetic rubber plants owned by the government and operated by the company on a cost-plus-fixed fee basis. This production amounted to more than $490,000,000. Net remuneration for operating these separate war plants was $7,657,087 described as "other operating revenue" in the consolidated income statement, which compares with $11,991,305 in 1943. This lower revenue resulted from voluntary reduction by the company in fees from the government and the closing of four ordnance plants.

Favorable influences on the net income were the sale of the mortgage held by the company upon its former office building at 1790 Broadway, New York City, which mortgage had been partially amortized in previous years, and the sale of other miscellaneous securities.

There is also included in the net income $1,277,891 representing the unused portion of the provision for renegotiation of war contracts, after taxes, relating to 1943 business. This resulted from an agreement with the government in 1944. Based on the terms of the settlement in 1943, and because of voluntary price reductions made during 1944, it was not necessary to make provision for renegotiation for 1944. Direct taxes aggregating $57,584,271 were charged against operations during 1944 in comparison with $59,193,095 for the previous year.

Total additions to property and plants during the year amounted to $25,383,501, less depreciation amounting to $9,724,195 and disposals and adjustments of $570,022, resulting in a net increase of $15,089,284.

The balance sheet as of December 31 last, showed current assets of $157,209,948, including cash and U. S. Treasury Bonds of $27,479,654, compared with current assets of $154,818,635 and cash of $34,803,321 at the close of 1943. Accounts and notes receivable from customers, less reserves for doubtful accounts of $2,120,010, amounted to $51,004,830. This contrasted with comparable sums of $2,095,670 and $47,855,054 in the preceding year. Inventories totaled $75,425,099 against $69,580,780. Working capital was $93,732,772. Current liabilities, including accounts payable of $20,725,278, totaled $63,477,176, which compared with accounts payable of $16,171,233 and a total of $45,383,031 in 1943.

Net assets of the company and its subsidiaries located in foreign countries at the close of the year were $15,542,854, with the major portion, $12,295,126, in Canada. No information as to the condition of the rubber plantations in Sumatra and Malaya, which continue to be held by the enemy, has been received. The investment was written off in 1942.

On December 31, 1943, there was outstanding a balance of $31,725,000 of First Mortgage and Collateral Trust 3½% per cent Bonds, which constituted the funded debt of the company. During 1944, $3,417,000 of these bonds were retired at par in accordance with sinking fund provisions. The remainder, or $28,308,000, was called for redemption and paid as of December 31, 1944, together with the required call premium of 8 per cent or $2,264,640 ($328,373 after taxes).

The funds for this refinancing, in the amount of $30,000,000 were obtained from 33 of the banks with which U. S. Rubber maintains active banking relations through the issuance on December 27, 1944, of ten year serial bank notes bearing interest at the annual rate of 2 per cent. These notes will mature in the amount of $1,500,000 semi-annually beginning June 27, 1945.

A total of $189,766,092 was paid in wages and salaries during 1944 to an average of 78,347 employees. As of December 31 last, over 17,000 men and women employees had responded to the call for military service.

NET PROFIT OF $12,015,842 REPORTED BY B. F. GOODRICH

B. F. Goodrich Co. reports consolidated net income of $12,015,842 for the year of 1944, after provision of $59,163,000 for estimated Federal and foreign income and excess profits taxes, less postwar credits, and estimated renegotiation of war contract prices, and after providing a reserve of $3,500,000 for contingencies. This compares with $11,584,501 reported for the previous year after provision of $66,459,000 for taxes and $4,000,000 for contingencies.

The 1944 earnings were equal to $7.64 a common share, which compares with $7.31 a share in 1943. The number of common shares outstanding in both years was 1,303,255. Consolidated net sales for 1944 amounted to $419,294,119, compared with $374,408,710 in the previous year an increase of 12%. The production from government-owned plants operated by the company is not included in sales for either year.

The consolidated balance sheet as of Dec. 31, 1944, shows current assets of $118,179,745 and current liabilities of $43,409,482, compared with $126,338,320 and $48,350,926, respectively, a year earlier. Inventories amounted to $56,794,357, compared wtih $61,772,990. The company's net investments outside of the United States at the year end amounted to $5,389,019, of which $3,010,054 was represented by net current assets and $2,378,965 by other assets. Of these net investments, $4,016,479 related to operations in Canada.

According to the report, renegotiation of war contract prices for 1943 was completed, and reserves provided in the accounts for that year were sufficient to absorb its effect. Renegotiation for 1944 is still pending, but provisions believed to be adequate have been made. In 1944 Goodrich borrowed and repaid $20,000,000 under a revolving credit of $50,000,00 arranged in 1943 to finance war business, and there is now outstanding a $20,000,000 V-loan borrowed since the year-end.

The report also makes mention of the fact that production of synthetic rubber was carried on at levels exceeding their rated capacities in each of the three copolymer plants operated for the government; that facilities of established tire plants have been increased and production at the new Miami, Oklahoma, plant has been started; that the torsilastic rubber spring introduced in 1939 has proved its practicability in the gruelling service of amphibian tanks used in landing operations; that the endless-band track pioneered by the company has proved valuable and versatile in various military machines; and that Goodrich De-Icers are now being used on the fastest of fighting planes.

General Tire & Rubber Co.

Year ended Nov. 30: Net profit of $2,198,569, an increase of 26.3% over 1943, which is equal to $3.62 a common share, and which compares with $1,740,084, equal to $2.75 a common share, for the previous fiscal year. Profits before deduction for taxes and contingencies were $6,398,569. Sales, which were the largest in the company's history, amounted to $73,838,570, an increase of 42% over the $51,987,521 reported in the previous year.

Monsanto Chemical Co.

For 1944: Net profit of $5,077,192 after taxes and after deduction of minority interests, which is equal to $3.30 a common share, and which compares with $5,365,775, equal to $3.56 a common share, for 1943. Net sales amounted to $86,996,391, an increase of 6.5% over 1943 and the highest in the company's history.

GOODYEAR TIRE & RUBBER REPORTS NET OF $15,204,270

Goodyear Tire & Rubber Co. reports a net profit of $15,204,270 for the year of 1944, based on consolidated net sales of $786,722,287, which compares with $14,779,048, based on sales of $726,569,275, reported for the previous year.

The 1944 earnings, arrived at after deducting provisions for depreciation, interest, minority shareholders' equities in earnings of subsidiary companies, a contribution of $1,000,000 to the Employees Pension Trust Fund, $56,374,368 for foreign and domestic taxes (less postwar credits), and a reserve of $5,000,000 for property adjustments and other contingencies, is equal to $5.90 per share of common stock, which compares with $5.68 per share in 1943 after allowing for renegotiation in both years—actual for 1943 and estimated for 1944.

The consolidated net sales of $786,722,287 for 1944, an increase of 8% over 1943, include the company's expenditures and fees under cost-plus-fixed-fee contracts, but do not include the substantial volume of production in the three copolymer plants owned by the government and operated by Goodyear.

While full provision was made for renegotiation of 1943 war contracts in the financial statements sent to shareholders as of June 30, 1944, for purposes of comparison the 1943 accounts have been adjusted to show the effect of renegotiation on sales, taxes, reserves, net profits and earned surplus account. The net result was to reduce reserves by $2,250,000 and net profits carried to earned surplus account by $6,700,000, after corresponding reduction of tax liability. Renegotiation for 1944 has not been completed but provision therefore has been made in the 1944 accounts on a basis believed to be adequate.

After deducting the portion of foreign investments not held by the company, the consolidated balance sheet includes $26,739,000 of net investments outside of the United States, including approximately $4,767,000 of cash representing working capital of various foreign interests required in the course of business. Net profits of $5,506,391 arising therefrom are included in the consolidated Profit and Loss Statement. Working capital now amounts to $122,662,000, and the ratio of current assets to current liabilities is 3 to 1.

In the statement issued to stockholders in connection with the report, the company pointed out that an anticipated increase in the postwar demand for regular and new products suggested a further strengthening of the financial structure, and accordingly the company negotiated with holders of its First Mortgage and Collateral Trust 3½% Bonds, to the result that the maturity is extended from 1958 to 1964, and sinking fund payments—both fixed and contingent—are omitted until July 15, 1950. This action effects a benefit to working capital of some $15,00,000 over the next five years and commencing June 16, 1950, the interest rate is reduced from the present 3½% to 2¾%.

The statement also pointed out that the company's aircraft plants in Akron and Arizona have operated at full capacity throughout 1944 and have unfilled orders on hand sufficient to require capacity operation through 1945; that additions to present tire factories, and new tire plants planned for Topeka, Kansas, and Nashville, Tenn., are now in the process of construction; that a new plant for the manufacture of chemicals has been started in West Virginia; that the company's plants generally throughout the world have been running at full capacity, although the plant in Java is still in the hands of the Japanese and the plant in Sweden only recently has been able to acquire sufficient raw materials to resume operations; and that the copolymer plants built by the government for operation by Goodyear are all in operation and have a present capacity of approximately 200,000 tons a year.

Memo to War Contractors

The Joint Army-Navy Termination Regulation is the "Bible" for war contractors to be used in the rapid settlement of war contracts. A recent survey discloses that less than 40% of the war contractors circularized had availed themselves of this publication. A Joint Army-Navy Distribution Center has been established at 90 Church Street, New York, New York, to distribute this publication together with other printed material pertaining to contract settlement. It is *imperative* that contractors holding war contracts be placed on the mailing list for the Regulation and all subsequent changes. There is no charge for any publication distributed by this office. Contractors merely have to write to the Joint Army-Navy Distribution Center, 90 Church Street, New York, New York, Attention: Lt. E. P. Lull, and copies will be forthcoming.

Raybestos-Manhattan, Inc.

For 1944: Net profit of $1,677,465, after deductions of $750,000 for postwar contingencies and $7,414,000 in taxes, which is equal to $2.67 a share, and which compares with $1,651,160, or $2.63 a share, after comparable deductions of $1,000,000 and $7,095,000, in 1943.

Dewey & Almy Chemical Co.

For 1944: Net profit of $580,807, equal to $1.89 a share for 307,231 common shares, which compares with $566,003, or $1.88 a share for 301,208 shares, for 1943. Record gross sales amounted to $10,349,665, a gain of 16% over 1943.

MOHAWK RUBBER REPORTS NET PROFIT OF $361,119

For 1944: Net profit of $361,119, after deductions of $89,687 for amortization and depreciation and $1,038,150 for income and excess profits taxes, equal to $2.55 a common share, which compares wtih a net of $354,434, or $2.50 a share, for the previous year. Net sales of $6,715,016, largest in the company's 32-year history, represent an increase of 27% over the $5,290,996 reported in 1943.

According to the balance sheet as of December 31, 1944, the company's total current assets amounted to $1,674,465, including $292,383 in cash, $594,548 in trade accounts receivable, and $787,534 in inventories, which compares with total current liabilities of $363,593, including $170,099 in accounts payable, $17,523 in advance payments, $1,904 in unclaimed dividends, $46,847 in accrued miscellaneous taxes, and $127,220 in accrued federal taxes. The company's total assets are reported as $2,696,344. Renegotiation of war contracts for 1943 was completed and no refund of profit was required.

Mohawk's participation in the program agreed upon between the rubber industry and the government to undertake sizeable expansion to meet wartime demands required $272,057 for additional plant space and equipment; full utilization of the new machinery is expected throughout the current year. The present production pattern indicates a substantial increase in military rubber goods.

United Carbon Company

For 1944: Net income of $2,232,286, which is equal to $5.61 a share after deductions of $250,000 for contingencies and $1,075,000 for taxes, and which compares with a net income of $2,047,327, or $5.15 a share, after deductions of $300,000 for contingency reserve and $1,020,000 in taxes for the previous year. Both years are subject to renegotiation, but no effect on earnings is expected by the company.

Firestone Memorial Library

The family of the late Harvey S. Firestone has given $1,000,000 to a Princeton University fund for the erection of a new $3,500,000 library, to be known as the Harvey S. Firestone Memorial Library. The new library will stand in the northeastern section of the campus and will form the northern wing of a group of buildings which includes the chapel and McCosh and Dickinson Halls. Dr. Harold W. Dodds, president of the University, from which Mr. Firestone's five sons were graduated, states that the new building will not only remedy a library space shortage, but will also provide facilities for carrying out Princeton's philosophy of education plan.

Miami Plant in Operation

B. F. Goodrich Co. announced on February 26 that its new tire plant in Miami, Oklahoma, has been placed in operation and the first tires have come off the production line. When in full operation the plant will produce approximately 200,000 pounds of finished product daily, and will provide employment for approximately 750 workers. The main building of the plant is 1200 feet long and 300 feet wide. J. W. Frasche is factory manager of the Miami plant. Other members of the executive staff include Fred Barnes, plant engineer; Clifford Norris, general foreman, processing departments; Al Morgan, general foreman, tire assembly departments; Roy Thomas, general foreman, tire curing department; Ralph Hutchinson, general foreman, inner tube departments; Earl Carpenter, manager, compounding and raw materials; and James Stevenson, manager, tire and tube construction.

Reveals New Developments

Several new developments, including special types of synthetic rubber, one with low water absorption and the other with high heat resistance, and a synthetic rubber latex with a 50% concentration of rubber in place of the conventional 30%, were disclosed recently by Dr. L. B. Sebrell, director of research of the Goodyear Tire & Rubber Co., to members of the International Rubber Study Group who toured Goodyear Aircraft and the Goodyear Research Laboratory in Akron. Dr. Sebrell also told the visitors that one of Goodyear's new engine mounts for the B-29 bombers is the probable forerunner of vibration-dampening equipment following the same principles for post-war automobiles. Such devices, he indicated, should double the amount of mechanical rubber items in automobiles.

Named as Vice-Presidents

Gordon H. Groth and R. B. Cave have both been elected vice-presidents of the Pennsylvania Rubber Co., Jeannette, Penna. Mr. Cave, who was assistant sales manager of the Electric Auto-Lite Co. before joining Pennsylvania Rubber three years ago, will continue as sales manager in charge of commercial and dealer business, while Mr. Groth will continue as assistant to the president in charge of government and special contracts.

Calco Plans New Factory

The Calco Chemical Division of the American Cyanamid Co., Bound Brook, N. J., has purchased an 800-acre tract near St. Marys, W. Va., 16 miles northeast of Parkersburg, 75 miles north of Charleston, and 12 miles from Marietta, Ohio, as a factory site. The proposed plant will develop new products whose basic raw materials are available in this section of the Ohio River Valley.

Goodrich Electronic Equipment

In the accompanying illustration, Charles W. Leguillon (left), manager of the machine and process development division of the B. F. Goodrich Co., and

William Jenkins, Goodrich electronics engineer, are seen operating part of the equipment used in the Akron plant for the electronic vulcanization of rubber and plastic materials. Use of this relatively new type of vulcanizing equipment creates uniform heat throughout the material in a fraction of the time required by standard methods. Sponge rubber mattresses and pads, for example, have been cured in one-eighth the time taken by the conventional method.

Fremont Plans to Rebuild

The Fremont Rubber Co., Fremont, Ohio, is planning immediate replacement of its factory, which was destroyed by fire on January 12. WPB approval for materials and equipment has already been obtained. The new plant, which will be completely fire-proof and will contain 43,000 square feet of floor space, is expected to cost $100,000, and will be equipped with machinery costing approximately $200,000. Fremont Rubber, which has been engaged in processing rubber for Firestone, will install new types of machinery for mixing synthetics.

Reintroduce Tire Bill

The rubber tire bill of the last Congress, proposing legislation for the protection of independent tire dealers, including a clause to prohibit the large tire manufacturers from distributing their products through company-owned wholesale and retail outlets, was reintroduced in the U. S. Senate on March 8 by Senator James E. Murray, of Montana. Senators Allen J. Ellender (Louisiana) and Robert F. Wagner (New York) were co-sponsors. The bill has been referred to the Committee on Banking and Currency.

Kyrides Wins Midwest Award

The St. Louis Section of the American Chemical Society on February 25 named Dr. Lucas P. Kyrides, research director of the Organic Chemicals Division of Monsanto Chemical Co., as winner of its first annual Midwest Award. The award, a gold medallion, given for "meritorious contribution to the advancement of pure or applied chemistry or chemical education," was to have been presented at a dinner at the Hotel Coronado, St. Louis, on March 5. Dr. Kyrides was a pioneer in the development of synthetic rubber substitutes, independently duplicating and enlarging upon the work of German chemists. He assigned his original patents to the Hood Rubber Co. The validity of these patents was hotly contested by German interests, but Hood won an interference test on every point at issue.

Spalding Changes Stock Value

Stockholders of A. G. Spalding & Bros., Inc., have approved an amendment to the company's certificate of incorporation changing the first preferred stock from no par value to a par value of $50 per share. The new preferred stock carries a right of exchange for common stock at the rate of one share of preferred for four of common. Stockholders have also approved a reduction in the number of preferred shares which the company must retire before the payment of common dividends from 3,312 shares per year to 1,000 shares annually either by purchase of the preferred stock or retirement.

Solution Form of Paraplex G-25

Paraplex G-25, originally developed as a plasticizer for elastomers, has proven to be of interest in the field of coatings, according to the Resinous Products & Chemical Co., Philadelphia, Penna., and to simplify its use in various coating applications the company has made it available in a 60% solution in toluol. At present, the availability of Paraplex G-25 60% is limited by the restrictions on critical solvents, but the new grade promises to be of great usefulness in normal times in the manufacture of high quality coated fabrics, can coatings and special lacquers of various types.

Switches Factory Heads

Transfer of E. T. Ruffner from the superintendency of its Topeka, Kansas, plant to a similar post at the company's new tire plant in Nashville, Tenn., has been announced by the Goodyear Tire & Rubber Co. L. E. Spencer will succeed Mr. Ruffner at Topeka. Mr. Spencer recently returned to the Goodyear organization after a three-year tour of duty with the government, his most recent position having been Deputy Director of the Rubber Bureau of the War Production Board.

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To meet the critical standards of hospitals in all parts of the country, a maker of white GR-S rubber sheeting uses Sun Circo light and Circosol 2XH as processing oils. After two years, the company chemist reports:

No discoloration of sheeting, due to pigmentation and a minimum of shrinkage. There has been no blooming, either.

High compatibility with GR-S is a characteristic of Sun oils, and they are neutral in curing, thus eliminating the need for adjustments of sulphur and accelerators.

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New Plasticizing Materials

A series of esters of cumic acid (p-isopropyl benzoic acid), which are said to be particularly useful plasticizers for the oil-resistant type of specialty synthetic rubbers, such as Hycar, has been developed by the Kilgore Development Corp., 1050 Thirtieth St., N.W., Washington 7, D. C. Although "Butyl Cumate" is reported to give especially good action, all of the esters are said to give good tensile, good elongation, low temperature flexibility, and desirable processing characteristics. Boiling ranges of the various esters vary, the ethyl type having a boiling range of 92-5°/2 mm. while the butyl carbitol type has a range of 183-5°/3 mm. Since all of the esters have much the same plasticizing action, higher boiling types, such as octyl or benzyl, may be more suitable for applications where conditions of elevated temperature are encountered.

Flintkote to Shift Operations

Recent acquisition of the Whippany, N. J., rubber reclaiming plant of Raybestos-Manhattan, Inc., previously operated by the Manhattan Rubber Manufacturing Division of that company, by the Flintkote Co., brief reference to which was made in our last issue, will permit the relocation of certain operations from Flintkote's main plant at East Rutherford, N. J., according to a company announcement. The acquisition covered the Whippany plant and a 55-acre property near Morristown, N. J., and the property provides greatly needed additional facilities in New Jersey for the Flintkote concern. Furthermore, the site is said to offer adequate space for development of other Flintkote operations. Flintkote has also purchased the Tile-Tex Co., manufacturers of floor coverings.

Goodrich to Build New Plant

The B. F. Goodrich Co., Akron, has taken options on land at Avon Lake, near Cleveland, Ohio, as the probable site of an experimental war chemicals plant. It is expected that government approval will be obtained and that construction will begin during the next few months. The Goodrich chemical division now operates plants in Ohio, New York, Kentucky, and Texas.

United Moves Chicago Office

The United Carbon Co., Inc., which maintains headquarters in Charleston, W. Va., has moved its Chicago office from 3217 W. 47th Place to 135 S. La Salle St., Chicago 3, Ill. The new telephone numbers are Central 1353-1354. The office is under the supervision of C. M. Baldwin, Chicago District Manager.

All-Rubber Arctic Overshoe

Illustrated above is the new all-rubber arctic overshoe described in the February, 1945, issue of RUBBER AGE. Developed by the Quartermaster Corps of the Army, this new shoe replaces the former cloth top overshoe, now designated as "limited standard." Manufacture and procurement of the all-rubber arctic was expected to begin this month.

Lockwood Discusses Synthetics

Representing the rubber industry as guest speaker on the Mutual Network program, "Your America," sponsored by the Union Pacific Railroad, Warren S. Lockwood, executive vice-president of the Rubber Manufacturers Association, on February 11 told a nation-wide radio audience how the synthetic rubber program has made it possible to supply the military forces with rubber goods. Paying tribute to Bernard Baruch and W. M. Jeffers, he stated that American synthetic rubber factories now have a capacity of more than 1,000,000 tons of rubber a year and that in 1944 the 150 leading rubber companies turned out more than $4,000,000,000 worth of army materials and munitions. "We have laid the foundation of a synthetic rubber industry," he said, "which will forever make America independent of crude rubber importations from the Far East."

Scott Changes Corporate Name

The Henry L. Scott Co., of Providence, R. I., manufacturers of testing machines, including the well-known Scott Tensile Tester, has changed its corporate name to Scott Testers, Inc. In announcing the change, David C. Scott, president and treasurer, said that it was one of name only and was made to better describe the firm in relation to the equipment it manufactures. Officers and management remain the same, including Frank A. Valentine, vice-president; James M. Scott, secretary; and David C. Scott, Jr., assistant treasurer, at present on active duty as a Lieutenant of the U. S. Naval Reserve.

Write that V-Mail letter tonight

Organize New Research Concern

The formation of the National Atlantic Research Corporation, which combines the facilities and personnel of the several laboratories of National Fireworks, Inc., with those of Atlantic Research Associates, Inc., at Newtonville and Newton Center, Mass., was recently announced. F. C. Atwood is president of the new company and vice-presidents include Dr. Henry Hill, Dr. Joseph Ackerman and Edwin S. Dwelly. Lloyd K. Larson is treasurer. National Fireworks has been engaged largely in secret war work, while Atlantic Research Associates is well-known for its development of Aralac, the synthetic fibre, and Arapol, a chemurgic rubber. The newly-organized concern is expected to introduce several new compounding ingredients for the rubber industry in the near future, including tackifiers and plasticizers.

Para Lene-W—New Softener

Para Lene-W, a new light-colored softener and plasticizer for synthetic rubber, has been introduced by the C. P. Hall Co., Akron, Ohio. Prepared specifically to meet the increased interest in light-colored GR-S stocks and in black stocks which do not stain white finishes, the new material is said to have tested equal in almost every respect to the parent compound—Para Lene. As a plasticizer for GR-S, Para Lene-W is equal to Para Lene, and neither compound affects the rate of cure of GR-S to any appreciable extent. The aging properties of stocks containing either compound are comparable. Tentative specifications for Para Lene-W include acid and iodine numbers less than 20, ash less than one-half of 1%, less than 1% soluble in acetone, flash point above 350° F., and pour point —70° F.

Hershberg Co. Plans Plant

The Hershberg Products Co., Ashtabula, Ohio, is planning to build a rubber manufacturing plant in Ashtabula. Sam Hershberg, who was formerly associated with the Dunne Rubber Co., Ashtabula, as general manager, has operated the Hershberg Products Co. in recent months as a sales agency for rubber and plastics products. The new manufacturing company will retain the name of the sales organization.

Stauffer Expanding Plant

Plans for the expansion of its Hammond, Indiana, sulfuric acid plant to meet accelerated wartime demands and to insure sufficient tonnage for post-war activities have been announced by the Stauffer Chemical Co. This increase in capacity of the plant will require considerably more floor space and a permanent structure is in process of erection and should be completed about July 1.

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LOS ANGELES NEWS

Fred Schluter, president of the Thermoid Co., Trenton, N. J., which recently acquired the Los Angeles plant and assets of the Grizzly Manufacturing Co., was a visitor at the March meeting of the Los Angeles Rubber Group. He was introduced to the membership by Ed Royal, an old friend.

Walter Boswell, local representative of the Thiokol Corporation, has returned to Los Angeles from a trip east, during which he visited New York, the home plant in Trenton, and other points.

At this writing, Frank Baglin, of the West American Rubber Co., is in the hospital with a badly injured hand.

Earl C. Meehan, of the Farrel-Birmingham Co., Inc., Ansonia, Conn., spent three weeks in the Los Angeles area during the latter part of February and early part of March. He called on practically every rubber company in the area.

Dr. Ray P. Dinsmore, vice-president in charge of research and development for Goodyear, spent several days in Los Angeles recently and was one of the chief speakers at a meeting of the local section of the American Chemical Society held at Woodbury College, on Friday, March 9.

The first student plant visitation trip was conducted on March 6, when a group of students from the University of Southern California was shown through one of the major plants. Phil Drew, who has been working on this sort of thing for some time, pronounced the first trip a decided success and says he believes the idea is a very good one.

E. G. Brooks, one of the prime commuters of America, a man who runs back and forth constantly between Los Angeles and Greakalajara, Mexico, where he is associated with Aguilar Hermonas, spent a few weeks in Los Angeles late in February and early in March. He announces that the Mexican company is this year celebrating its golden anniversary.

James C. Arnold is the new research man for the Lamb Rubber Corporation; Louis Roschay, formerly of Chicago, is the new factory production superintendent; and Robert Webb is now foreman. The company is busy at the moment putting in a new laboratory while several articles of equipment, including a new mill and several new presses, have recently been added. Chuck Lamb, head of the company, states that business is tops.

The Gross Manufacturing Company has purchased a new building site in an industrial tract in San Gabriel, Los Angeles suburb. Plans have not been announced.

Jim Bennett, formerly with Grizzly, who has been seriously ill for some time, is well on the road to recovery and was able to attend the March meeting of the Los Angeles Rubber Group.

Bob Abbott (C. P. Hall Co.), who was expecting his son home from the Aleutian Islands some weeks ago, at this writing reports that the boy, although due any time in Los Angeles, has not yet arrived.

H. A. White, service compounder at Goodyear, has been transferred to Akron where he was due to begin his new duties on March 1.

Governor Earl Warren of California recently was presented with a rubber ball made from guayule grown in the Salinas area. Fred S. McCargar, secretary of the Salinas Chamber of Commerce, said the ball represented the first finished vulcanized rubber product containing guayule rubber produced in the United States from seed planted after the war started.

Sam Tanney, of the recently-organized Tanney-Costello Co., of Akron, spent several weeks in Los Angeles recently on business. He was formerly associated with H. Muehlstein & Co. for many years.

W. D. Parrish, technical service manager of the Hycar Chemical Co., Akron, was another recent West Coast visitor. He spent two weeks on the Coast in February.

According to Major W. H. Hogeland, western truck tire unit chief of the Army Service Forces, manpower problems in rubber factories in the Los Angeles area will become acute shortly as furlough periods for servicemen-workers expire and civilian replacements become necessary. Replacements for some 600 servicemen "loaned" to the tire factories in the area will be needed when furloughs end, in addition to which some 400 men and 300 women are needed to staff the plants fully.

A completely revised edition of "The Consulting Chemist and Your Business" is now available without charge from Foster D. Snell, Inc., 305 Washington St., Brooklyn 1, N. Y.

Develop New Jungle Boot

An improved tropical combat boot has been developed by the Quartermaster Corps to replace the present, rubber-soled jungle boot, the entire upper half of which was made of canvas. The new boot is equipped with a heavy synthetic rubber sole which is deeply cleated to afford a maximum of traction. The boot resembles, in form, the standard combat boot inasmuch as it also has a five inch cuff which is sufficiently high to fold in the trouser leg, and is fastened with two straps and buckles. The upper is composed of a chrome retan leather vamp, with the flesh side out. The quarters, cuff, and tongue are made of olive drab nylon. The new boot weighs an average of one pound, four and a half ounces per boot, which is one pound lighter than the standard combat boot. A new feature is the addition of a small, screened eyelet, placed on the inside of the shank area, to permit water to drain from the shoe while it is being worn. Procurement is expected to begin in July, 1945.

Additional "E" Awards

Included among companies receiving the Army-Navy "E" award in recent weeks for production efficiency were the following:

General Cable Corp., Buffalo, N. Y., and St. Louis, Mo.

United States Rubber Co., Passaic, N. J.

Master Tire & Rubber Corp., Findlay, Ohio.

A renewal star has also been awarded to Resistoflex Corp., Belleville, N. J., and a fifth star, believed to set a record in the rubber industry, to the Acushnet Process Co., New Bedford, Mass.

Offers Consulting Service

A. O. Blades, until recently associated with the Plastic Wire & Cable Corp., Norwich, Conn., in charge of manufacturing operations, has left that organization and is currently offering a consulting service to the wire industry on rubber and plastic insulation. Mr. Blades, who was associated with the General Cable Corp. for a number of years, and who was also connected with the Rome Cable Corp. for a period, is maintaining headquarters at his home, 509 West Walnut St., Rome, N. Y.

Goodrich Selects Brecksville

The B. F. Goodrich Co., Akron, has announced its decision to build its projected new $1,500,000 research laboratory at Brecksville, Ohio, after consideration of a number of other available sites. Architects have completed principal plans and designs, and construction work will be started as soon as possible. The laboratory will include nine buildings and will employ 100 professional and 110 non-professional workers.

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CANADIAN NEWS

Synthetic rubber development during the past year has probably saved the world's greatest natural rubber plantations from destruction by the Japanese, according to John L. Collyer, president of the B. F. Goodrich Co., Akron, Ohio. "We must not assume that the Far Eastern plantations will never again be a factor in world rubber production," said Mr. Collyer, in a message read by George W. Sawin, president of the B. F. Goodrich Rubber Co. of Canada, Ltd., at the annual meeting of the Canadian company at Kitchener, Ontario.

"I do not feel that the Japanese will cause the destruction of the plantations when they withdraw," Mr. Collyer's message continued. "A year ago I would have ventured a different opinion. The reason for the change is the fact that the plantations no longer constitute a military weapon now that adequate rubber is being provided by the synthetic rubber industry in Canada and the United States."

Mr. Collyer said man-made rubber of all types is now being produced in Canada and the United States at the rate of 960,000 tons a year and may reach a rate of 1,000,000 tons by the end of 1945. Total consumption of rubber in the two countries may exceed 900,000 tons this year, and more than 85 per cent of this unprecedented amount will be synthetic. "The ability to provide enough synthetic rubber in time to avert military and home front disaster represents an outstanding achievement without parallel in industrial history," he concluded.

On increased sales and gross profits, Goodyear Tire and Rubber Company of Canada, Limited, for 1944 reports a profit of $2,540,499, after all manufacturing, selling and administrative expenses and income and excess profits (including refundable portion of excess profits tax amounting to $228,154), but before providing for depreciation. From this amount, there has been set aside a reserve of $1,187,699 for depreciation of buildings and for new equipment required for the war effort, leaving a net profit of $1,352,800. This compared with a net profit of $1,448,537 in 1943.

The net earnings for the year were equivalent to $4.14 a share on the 257,260 shares of common stock outstanding, as compared with $4.51 a share in 1943, $6.33 a share in 1942, $5.09 a share in 1941 and $4.25 a share in 1940. Dividends paid were $287,368 on the 5% preferred stock and $1,300,000 on 257,260 shares of no par value common stock at the rate of $5 a share. In 1943 total common dividends were $1,200,000.

The working capital at December 31, 1944, amounted to $9,459,106, which was less than the working capital of $10,412,214 at the beginning of the year by $953,107; this reduction was occasioned chiefly by the substantial capital expenditures made during the year. The net expenditures for additions to buildings and equipment, amounting to $1,938,821, represent mainly the additional cost of equipment and facilities required for the processing of synthetic rubber and the manufacture of rayon cord fabric.

A comparison of operations shows that there was a reduction in the average percentage of profits to sales; the increase in the amount of gross profits was more than offset by increased provision for depreciation.

Dunlop Tire and Rubber Goods Company, Limited, in a report for the year ended December 31, 1944, shows a net profit of $169,033, equal after preferred dividends to $2.25 a share on the common, compared with $211,506 or $3.00 a share in 1943. These profits include the refundable portion of excess profits taxes. Income tax provision is shown at $298,000 (not including refundable portion of $38,000) as compared with $694,000 in 1943 and refundable portion of $140,000. Including refundable tax, the total was $336,000 in 1944 against $834,000 in 1943.

Operating profit is shown at $637,588 against $1,082,331. Depreciation provision was $185,581 against $192,156. Investment income was $15,026 against $15,331. Dividend payments on the common stock totaled $1.25 a share, against 50 cents in the preceding year. After dividends, earned surplus was increased by $56,889 to $804,340.

It will be recalled that the common dividend of this company was increased "at the instance of the Canadian exchange authorities," as a large number of common shares are held in Great Britain and such payment would increase the amount of purchasing power available in Canada to the United Kingdom.

James I. Simpson, president and general manager, states in the report that large-scale manufacture of produce from synthetic rubber was attained during 1944. He declares that although tire requirements for essential transportation in Canada was being very largely met, any relief for ordinary motorists will depend upon the trend of military operations.

Mr. Simpson states that sales increased by 7% in 1944 over 1943; however, production costs increased considerably. The balance sheet reveals net working capital of $3,461,277 at the close of 1944 against $3,338,304 at the end of 1943.

Prospects for new tires for Canadian motorists are "remote," the annual meeting of the Ontario Motor League was recently told by R. C. Berkinshaw, retiring president. He said, however, that a decline of only 3% in passenger cars in Ontario indicated the motorists are taking good care of the tires they have. W. G. Robertson, general manager, reported that 50 per cent of car owners in Ontario will have tire trouble in 1945. He said the average age of cars in use now is nine years, compared with 4½ years before the war.

Directors of the Goodyear Tire and Rubber Company of Canada, Limited, have declared the regular quarterly dividend of 62 cents per share on the common stock, payable April 2, and regular quarterly 1¼ per cent on the preferred, payable April 1, both to shareholders of record March 15.

Meyer Lefcort, 75, former president of the British Rubber Company, Montreal, died on February 20 at his home in Outremont, a suburb of Montreal. He was named president of the company in 1925.

Appointment of Georges Bergeron as general sales manager of the mechanical and sundries division of the Dominion Rubber Company, Limited, has been announced by George B. Rutherford, general manager of that division. Mr. Bergeron was formerly director of the company's government sales at Ottawa, and more recently was manager of the Ontario sales division.

According to latest reports, more than 800,000 synthetic rubber tires for essential civilian uses were made in Canada in 1944. The report stresses the fact that general civilian requirements were in no wise met. Total natural rubber utilized in Canada during 1944 amounted to 10,000 tons, as compared with 60,000 tons in 1941.

William A. Eden, vice-president of the Dominion Rubber Co., Ltd., has been named a vice-president of the newly-organized Mount Royal Hotel Co., Ltd., in Montreal.

Acquisition of the Irwin Dyestuff Corporation, Limited, by the Dominion Rubber Company, Limited, has been announced by Paul C. Jones, president. The Irwin corporation will act as sales outlet for various dyes and chemicals, according to Mr. Jones, and will complement the activities of the Naugatuck Chemicals Division of Dominion Rubber. John Irwin, president of Irwin Dyestuff Corporation, Limited, for many years, remains in that capacity and the management and personnel of the acquired company also remain unchanged.

Mr. Jones further stated that Dominion Rubber has established a large research laboratory at Guelph, Ont., which is proving an invaluable aid to the company, particularly in the rapidly expanding field of rubber chemicals and synthetics.

up in the stratosphere

WITH FEET ON THE GROUND

Technicians in Monsanto's Rubber Research Laboratories, in Akron, Ohio, can take samples of rubber "into the stratosphere" without leaving the ground. They accomplish this by use of a sub-zero test box in which temperatures as low as -100°F. can be attained.

With this device, the reaction of stratosphere temperatures on various samples of natural or synthetic rubber can be determined without the cost, in time and money, of making an airplane trip into the blue.

During the more than twenty-five years that Monsanto's Akron laboratories have served the rubber industry, the staff of experts has been in the "stratosphere of research" many times in exploring for ways to make rubber more useful to mankind. But always this staff has had "its feet on the ground of experience." This willingness to explore, combined with practical knowledge of rubber, makes the laboratory's service extremely practical.

If you have a problem of wartime rubber compounding, you are welcome to submit it to the Monsanto Rubber research laboratories... without cost and without obligation. MONSANTO CHEMICAL COMPANY, Rubber Service Department, Second National Building, Akron 8, Ohio. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Seattle, Montreal, Toronto.

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ACCELERATORS
ANTIOXIDANTS
COLORS
PLASTICIZERS
INSOLUBLE SULFUR "60"
WETTING AGENTS

OBITUARIES

Alfred A. Spadone

Alfred A. Spadone, retired executive of rubber and bronze concerns, and an uncle of C. C. Spadone, president of the Spadone Machine Co., died at his home in Montclair, N. J., on February 25, after a long illness. He was 88 years of age. Born in Jersey City, N. J., Mr. Spadone spent the greater part of his life in New York City. He established his own firm for the manufacture of bronze at the age of 18, executing bronze memorials for historic land sites in the United States and bronze doors and embellishments for many notable buildings. Later he joined the Gutta Percha & Rubber Manufacturing Co., organized by his father in 1855, as secretary, and for many years was closely associated with the rubber industry. Mr. Spadone was well known for his interest in painting and achieved some fame as an amateur copyist. He was a former member of the New York Chess Club and the New York National Guard. A widow and two daughters survive.

Frank B. Walsh

Frank B. Walsh, one of the pioneers of the American rubber industry and superintendent of the West Haven, Conn., plant of the Armstrong Rubber Co. since its organization in 1921, died on January 27 following a brief illness. He was a brother of James A. Walsh, president of Armstrong Rubber. Mr. Walsh started his career in the rubber field with the Spalding & Pepper Co. at Chicopee Falls, Mass., predecessor of the Fisk Tire Co., now the Fisk Tire Division of the U. S. Rubber Co. Later he worked with both the Hartford Rubber Works and the National Rubber Co., of Pennsylvania, leaving the latter concern to help organize the Vulcweld Tire & Rubber Co. at Pottstown, Penna. For the past 24 years he was associated with the Armstrong Rubber Co.

Harrison A. Mayse

Harrison A. Mayse, former vice-president and treasurer of the H. O. Canfield Rubber Co., Bridgeport, Conn., died at his home in Southport, Conn., on February 19, after a long illness. He was 71 years of age. Mr. Mayse was born in Emporia, Kansas. He was employed at the Lincoln National Bank in Washington, D. C., until 1898, when he went to Bridgeport to work for the American Graphophone Co. In 1901 he joined the Canfield Co., becoming acting secretary in 1908, assistant treasurer in 1914, secretary in 1915, and vice-president in 1916. He is survived by a widow and an adopted son.

Morris Barbanell

Morris Barbanell, president of M. Barbanell, Inc., crude rubber dealers of New York City, and vice-president of the Bristol Manufacturing Co., rubber footwear manufacturers of Bristol, R. I., died on a golf course in St. Petersburg, Florida, on February 10, from a heart attack. He was 50 years of age. Born in Brooklyn, N. Y., Mr. Barbanell was educated in local schools. His first contact with the rubber industry came around 1919 when he joined the N. Y. Paint & Varnish Co., which did some trading in crude rubber. In later years he was associated with Hermann Weber & Co. and with Fred Dunbar. He organized the firm of M. Barbanell, Inc., in 1938, and remained as its active head until his death. A resident of Woodmere, L. I., N. Y., Mr. Barbanell was a member of the Woodmere Country Club. He was also a member of the fraternal orders of the Masons and the Elks. Internment was in a Long Island cemetery. A widow and two sons survive.

John Hall

John Hall, associated with the Dunlop Rubber Co., Ltd., Birmingham, England, for more than fifty years before his retirement in 1939, died recently in Birmingham at the age of 75. Mr. Hall began work at 21 in the Dunlop factory in Coventry, England, said to be the world's first pneumatic tire plant, where his first job was to put tubes into casings and to apply the rubber tread. He subsequently became works manager of the plant. He also made certain contributions to the development of the pneumatic tire. In June, 1941, Mr. Hall returned from his retirement to serve at Fort Dunlop during the war emergency. He is survived by a widow, a son, and a daughter.

David S. Servis

David S. Servis, vice-president of the Michelin Realty Co. and former treasurer of the Michelin Tire Co., died at his home in Milltown, N. J., on March 2, after a long illness at the age of 52. Mr. Servis became treasurer of Michelin Tire shortly after its organization in the United States and assumed charge of its extensive real estate holdings after it withdrew from the American field and confined its manufacturing activities to France. He was also vice-president of the Milltown National Bank and a director of the Building and Loan Association of Milltown. A widow and daughter survive.

Ralph Stoddard

Ralph Stoddard, president and treasurer of the De Laval Separator Co., died in New York City on February 20, at the age of 75. Born in Poultney, Vermont, he originally operated a dairy equipment business founded by his father. In 1907 he joined the De Laval Co. In recent years he had effectively applied the principle of centrifugal separation to a variety of new industrial uses. Mr. Stoddard is survived by a son.

More Names in the News

B. B. "Britt" Wilson, general manager of the *India Rubber World*, is recuperating from a minor operation performed at the Flushing (L. I.) Hospital earlier this month. He is expected to return to the office shortly.

J. W. Reedy, formerly chief chemist of the New York Rubber Corp., is now associated with the Garlock Packing Co. at Palmyra, N. Y.

Dr. A. G. Susie, formerly affiliated with Gustavus J. Esselen, Inc., Boston, has joined the staff of the Marbon Corp., Gary, Indiana, as chief chemist.

E. G. Holt, formerly chief of the Leather and Rubber Division of the Bureau of Foreign & Domestic Commerce, and currently chief of commercial research for the Rubber Development Corporation, is recuperating from a hernia operation performed last month.

Ray A. Griffith, assistant business manager at Wooster College since June, 1942, has left that position to join the Wooster Rubber Co. as cost accountant.

R. R. Coleman, until recently affiliated with the St. Clair Rubber Co., has joined the Pharis Tire and Rubber Co., Newark, Ohio, as assistant to the chief chemist. John Breeding, formerly associated with the Master Tire & Rubber Co., has also joined Pharis as assistant to the plant engineer.

John P. Coe, general manager of the Naugatuck Chemical and Synthetic Rubber Divisions of the U. S. Rubber Co., gave a lecture on "The Outlook for Rubber" at the Academy of Music, in Brooklyn, N. Y., on February 3.

C. R. Wikel, formerly assistant to the plant manager of the Waukegan, Ill., plant of the Johns-Manville Corp., has been named plant manager of that factory.

CANCER

KILLS 1 ADULT OUT OF 6

IT MAY WELL KILL YOU!

GIVE!

GRIM FACTS: Yes, 1 out of 6 who read this page may die of cancer unless more money is given to wipe out this scourge.

The present one million dollars that Americans are giving is not nearly enough. Eminent scientists lack funds for experiment . . . cancer clinics are starved for equipment . . . sufficient money to care for pitiful advanced cases is not available.

Nearly every American family is destined to number a cancer victim with all the misery and expense involved . . . 17 million living Americans are now doomed to die of cancer!

Yet Americans give to the conquering of cancer less than one million dollars annually, as compared to one hundred billion dollars a year to the war. *More must be done!*

GREAT HOPE: You, by giving, can save perhaps yourself, perhaps a dear one, from cancer.

Leading cancer scientists say that five million dollars a year would cut the cancer death rate ⅓ to ½. And this even if not another fact were discovered . . . merely through wider education, more clinics.

Science wiped out yellow fever, solved small-pox, typhoid, diphtheria, found sulfa, penicillin. With funds, science can also find the answer to cancer for us all.

Do your part! Give, and give again to banish the dread curse of cancer, to save lives by treating cases in time. Send us any amount from 10¢ to $1,000. Every bit helps!

If you are a resident of the Metropolitan area of New York, send your contribution to

NEW YORK CITY CANCER COMMITTEE
130 East 66th Street, New York 21, N. Y.

Be as Generous as you can in this Life and Death matter.

CONTRIBUTIONS ARE DEDUCTIBLE FROM INCOME TAX

YOUR GIFT MAY SAVE YOUR LIFE AND THE LIVES OF THOSE YOU LOVE

AMERICAN CANCER SOCIETY
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New York 1, N. Y.

I enclose my contribution of $_____
to aid in the War Against Cancer.

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STREET ADDRESS_____

CITY_____ STATE_____

VULCANIZED VEGETABLE OILS

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Types, grades and blends for every purpose, wherever Vulcanized Vegetable Oils can be used in production of Rubber Goods—be they Synthetic, Natural, or Reclaimed.

A LONG ESTABLISHED AND PROVEN PRODUCT

THE CARTER BELL MFG. CO.
SINCE
CARTER BELL PRODUCTS
1903
SPRINGFIELD, NEW JERSEY

NEW EQUIPMENT

Ball Bearing Mounted Expander

A new expander, which is said to meet the long felt need for a device which will produce maximum width with minimum warp tension, and without undue wear on the surface of the expander, in the finishing or coating of fabrics, has been announced by the Mount Hope Machinery Co., Taunton, Mass. A single ex-

pander located in front of the nips of mangles, calenders or washers, etc., will protect the cloth from creases being squeezed into it. A special expander has proved most effective for rolling up rayon or cotton tire cord without wrinkles.

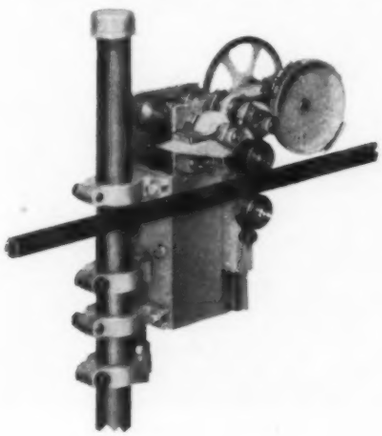
The roll is neoprene covered and ball bearing mounted. It is so free turning that the unit can be used for expanding rayon marquisette without putting too much tension on the warp; and as many as 6 of them at one time have been used on cotton marquisette in front of a stack of dry cans, thus producing exceptional crosswise stretch. The minimum tension on the warp greatly reduces the tendency of the cloth to contract in width and also increases the life of the rubber surface, because less drag is required to turn the expander.

The unit is mounted on a hexagon axle, 1-1/16 inches between flats, which is bent to any desired curve and supported at its ends by ingenious ball and socket clamps consisting of rustless bronze jaws held in heavy cast iron brackets. These brackets permit the expander to be set at any desired angle to the cloth, and the axle is secured in position with two ⅝ inch set screws in each bracket.

The inner races of the ball bearings have hexagon holes, so that they cannot turn on the axle, or stick and cut it. No screws or clamps (which might get loose) are used to hold the ball bearings and sleeves in place. A simple, unique device is used for this purpose. The whole assembly is securely held together by two collars with set screws, securely spotted into the axle, while the rubber covering is located and held by two bronze end castings. The rubber thickness is ½ inch and its outside diameter is 4¼ inches.

Automatic Marking Unit

A motor-driven, floor-mounted unit to print identification and other marks on tubes, bars or extruded shapes, in continuous lengths or cut-off sections, has been introduced by the Superior Type Co., 1800 West Larchmont St., Chicago 13, Ill. The unit can be mounted following molding or extruding machines, preceding cut-off units if desired. Lineal velocity up to 240 feet per minute is permitted by the unit, which is adjustable for stock up to 4 inches wide (or 4-inch diameter). A 6-inch diameter printing head permits maximum length of copy of approximately 18 inches, or repetition of short lengths of copy at any desired intervals. Width of copy is generally matched to the



requirement, as long as it does not exceed a total of 30 degrees on each side of the vertical center line of tubular stock. The printing unit features rubber type or dies, which are automatically inked for each printing. It is equipped with an ink reservoir and ink distributing rollers, and special inks to meet special requirements can generally be secured from the company. Because of the nature of the marking unit, models are usually built to customer specifications.

FOR EASY PROCESSING, USE PHILBLACK A

(FOR FURTHER DETAILS, SEE AD ON PAGE 582)

MAGNESIA

MAGNESIUM CARBONATE

Technical and U.S.P. Grades

MAGNESIUM OXIDE

EXTRA LIGHT

The Original Neoprene Type
A supreme quality product for the rubber trade. Extremely fine state of division. Improves storage stability and resistance to scorching. A curing agent unexcelled for increased modulus, greater resilience, reduced heat build-up, lower compression set and retention of tensile strength during heat service.

LIGHT

A high quality product of greater density than "Extra Light," but high in MgO and low in impurities. An excellent value for many uses.

MEDIUM

A good value. Very active. High Magnesia content, low in impurities. Medium density.

HEAVY

All types can be furnished. Specially ground to meet the exacting Code Pigment Specifications of the Rubber Trade. Unground types for chemical uses.
PACKAGES—Specially designed to protect contents from moisture and air. Corrugated carton with special water-proof liner, and inner paper liner. Five-ply multi-wall bag, including asphalt liner.

Special Service for All Requirements of the Rubber Trade

GENERAL MAGNESITE & MAGNESIA COMPANY

Specialist in Magnesia

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CHICAGO—The C. P. Hall Co.
DENVER—The Denver Fire Clay Co.
DETROIT—C. L. Hueston
LOS ANGELES—The C. P. Hall Co. of California
MONTREAL—Canadian Industries, Ltd.
NEWARK, N. J.—Chas. S. Wood & Co., Inc.
PORTLAND, ORE. — Miller & Zehrung Chemical Co.
ST. PAUL, MINN.—George C. Brandt, Inc.
SEATTLE, WASH.—Carl F. Miller & Co.
TRENTON, N. J.—General Supply & Chemical Co.

PALMALENE

A NEW PALM FATTY ACID OF MEDIUM TITRE, SYNTHETICALLY MADE

Excellent as a replacement for Stearic Acid in rubber compounding.

PALMALENE SPECIFICATIONS

Saponification Number	180-185
Iodine Value	55-60
Titre	35

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Dealers in SCRAP

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✓ SYNTHETICS
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MEYER & BROWN CORP.
Founded 1894
347 Madison Ave., New York 17, N. Y.

• WILD RUBBERS • GUAYULE • NEOPRENE • BUTYL RUBBER • VISTANEX •

Boot Resoling Equipment

The Union Supply Co., 1544 Broadway, Denver 2, Colorado, is currently offering to industry specially-designed equipment for the resoling of rubber boots. The equipment, illustrated herewith, is said to do a completely satisfactory heel, instep and sole recapping

job. According to the company, the equipment is universal in that one mold will cover a large range of sizes and a type of last has been developed which will cover the same range. Previously, it was necessary to have hundreds of mold sizes and last sizes in all shapes to properly cover the field. The molds are furnished by the company on a lease-franchise basis. The Union Supply Co. reports that boot resoling is popular with workers employed in creameries, packing plants, mines, and various types of factories. Miners, it is said, frequently have a pair of new boots resoled before they wear them since resoling insures a longer life and the heavier sole affords better foot protection against sharp rocks and rocky surfaces.

A small size, double plunger, slide valve type of pumping unit, called the **Automatic Central Pumping Unit DC-25,** which provides a positive high pressure pump for the handling of all types of lubricants without the use of springs, check valves or stuffing boxes, has been introduced by the Farval Corp., Cleveland 4, Ohio. The complete system will handle either oil or grease and requires no attention except the renewal of the lubricant supply in the reservoir.

AIR BAG BUFFING MACHINERY
STOCK SHELLS HOSE POLES
MANDRELS
NATIONAL SHERARDIZING & MACHINE CO.
868 Windsor St. Hartford, Conn.
Representatives: Akron San Francisco New York

New Ashcroft Air Control

The development of a new simple, rugged, durable, dependable air control for shallow well pumps has been announced by Manning, Maxwell & Moore, Inc., Bridgeport, Conn. Many exclusive features are claimed for this new Ashcroft Air Control. They include rubber diaphragm as the one single moving part which combines valve head, gland seal, and float hinge. The valve has a stainless steel orifice and is completely sealed. It has no water cavities. The body of the instrument is either cast brass or cast iron. The entire unit is compact and lightweight, measuring 1¾ inches between wrench flats. Control is for applications up to 80 lb. p.s.i. tank pressure.

The Special Products Division, General Electric Co., Schenectady, N. Y., has announced a new **electronic detector** for instantaneously detecting the presence of mercury-vapor concentrations in the atmosphere. It will measure directly mercury-vapor concentrations as high as one part in three million parts of air by volume and as low as one part in two hundred million parts, with an accuracy of approximately 5%.

A new and unusual **heating pot** for a variety of low melting point materials is reported to have been developed by the Kindt-Collins Co., 12651 Elmwood Ave., Cleveland, Ohio. Originally designed as a glue pot for patternmaking and woodworking shops, it has been found highly efficient in melting and maintaining liquidity of such diverse materials as shellac, kerosene, turpentine, waxes, metals, and certain types of plastic materials.

A new **lightweight blower for heat dispersion,** which operates under all conditions of climate and temperature, has been added to the line of the L. R. Manufacturing Co., Division of the Ripley Co., Torrington, Conn. The new unit weighs but 3½ ounces and delivers 50 c.f.m. at 8,000 r.p.m.

REMOVE THE NERVE WITH PHILBLACK A

(FOR FURTHER DETAILS, SEE AD ON PAGE 582)

CAPITOL PROCESS LINER TREATMENT

and the

Current Cotton Goods Shortage

In view of the stringent shortage of all types of cotton piece goods, it is imperative that all means be utilized to lengthen the life of your liners.

Therefore, we suggest that you seriously consider Capitol Process Liner Treatment. If you utilize our liner treatment it will materially lengthen the duration of their usefulness many months over untreated liners.

Such action may well relieve you of one of your current emergency problems.

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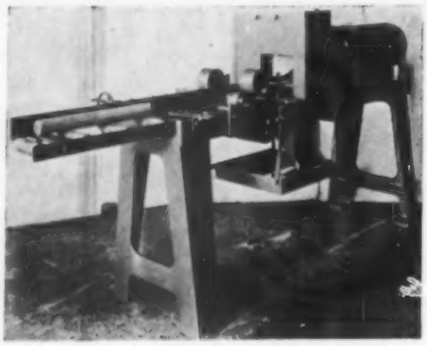
TEXTILE PROOFERS, INC.

181-193 Culver Ave., Jersey City 5, N. J.

Originators of the Liner Capitol Process Treatment

SLICER MACHINE FOR EXTRUDED STOCKS



With High Speed Disc Cutting Blade, Automatic Feed and with Tandem Feed Wheels. Capacity Section Up to 3" by 4½"—Length ⅛" to 4".

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FACTS
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WEARABILITY

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No need for guesswork in the testing of your own or competitor's products for wearability or resistance to surface abrasion. The Taber Abraser gives you the facts with scientific precision—yet the procedure is as practical as it is accurate. Eliminates time-consuming, expensive performance tests. Used by scores of textile manufacturers for testing the wearing qualities of all types of fabrics, even the sheerest.

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The Taber Test Proves What Wears Best

REVIEWS

BOOKS

South America Called Them. By Victor Wolfgang von Hagen. Published by Alfred A. Knopf, 501 Madison Ave., New York, N. Y. 5¾ x 8½ in. 311 pp. $3.75.

This is a well-told story of four scientists—La Condamine, Humboldt, Darwin and Spruce—whose explorations in South America, spread over a century and a half, unlocked the riches of that continent, including rubber. The whole story of South America is found in the book—the giant peaks of the Andes, the torturous path of the Amazon, the rain-sodden plains of the Orinoco, the nitrate deserts of Chile and Peru, the iron-mountained island of Tierra del Fuego. Well-written by an explorer who has traveled over much of the territory opened up by the earlier scientists, the book combines sound science and factual history.

Although Charles-Marie de La Condamine, who was sent to South America by the French Academie des Sciences to help determine the true shape of the earth, in an effort to disprove the Newtonian theory, was not the first to see rubber, since Columbus had reported its existence and Cortez found the Aztecs playing the game of *tlachti* with solid rubber balls, his reports were the first to attract Europe's attention to rubber and, according to this book, "his were the first scientific experiments, his the first mention of the Hevea tree" and "he was the first to bring back samples of rubber to Europe." La Condamine's first contact with rubber came in 1736 in the Esmeraldas area when the natives brought him a piece of stretching "cloth" which they called *caoutchouc*. Recognizing the water-resistant properties of the material, La Condamine "fashioned himself a rubber pouch for his quadrant" and thus unknowingly became the first white rubber manufacturer.

Before returning to France to report on his findings to the Academie des Sciences, La Condamine traveled the entire length of the mighty Amazon, from west to east. He continued to investigate the rubber plant during this trip and noted the existence of rubber trees along the entire length of the Amazon basin. He noted the use of molds by the natives and gathered syringes and "pumps which the Indians made of rubber, which among the Omaguas are a very common utensil." These he brought to Europe, along with chunks of coagulated rubber, and, according to the author, "so began the history of that product (rubber) which changed the industry of the world." Back in France, La Condamine "wrote of rubber, he experimented with the samples that he had brought back, he introduced it for the first time to the scientists of Europe."

Although La Condamine's connection with the early discoveries of rubber are fairly well known to the modern rubber industry, it is not generally known that he is also credited with the discovery of platinum and rotenone. During his South American venture some of the sambos in his party picked up metal which, being neither gold nor silver, was called *platina*. When finally examined by metallurgists in Europe, it became known that La Condamine had discovered platinum. When he found the natives using "leaves or roots which when thrown into the water have the faculty of intoxicating fish," he collected the plant and became the European discoverer of *varvascu*, or barbasco, which contains the alkaloid known as rotenone, now widely used as an insecticide.

Of the other three scientists, Humboldt and Darwin paid little attention to rubber during their respective work in

RAYCO FLOCK

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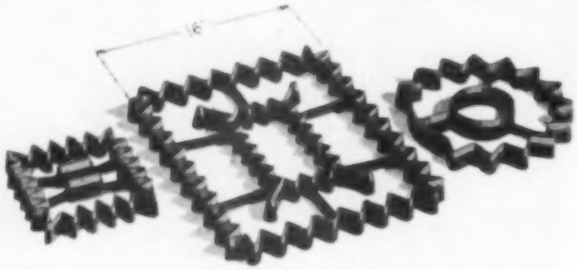

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South America, but Richard Spruce, one of the greatest botanical explorers in history, witnessed the growth of Belem, Para and Manoas into tremendous rubber centers. Returning from the heart of the jungles to Manaos in 1854 he found himself in the midst of the first large rubber boom, with the price of rubber already exceeding the $1.50-a-pound mark. Some of the plants and specimens of rubber products which Spruce had sent to the outer world were in part responsible for this boom. In some of his reports Spruce also told of watching the *seringueros* tapping Hevea trees "with a series of deep chevrons cut into the bark."

This book should prove of interest to the rubber industry because of its historical value and because it tells so well the story of South America which, once again, is an important producer of rubber. It is well documented and contains a carefully-prepared index.

•

Plastics—Scientific and Technological. By H. Ronald Fleck. Published by the Chemical Publishing Co., Inc., 26 Court St., Brooklyn 2, N. Y. 5½ x 8½ in. 326 pp. $6.50.

Originally published in England, and now available in an American edition, with some revisions, this book is an up-to-date and comprehensive text covering the scientific and technological aspects of the expanding plastics industry. Embracing both the European and American developments, it comprises a critical survey of the literature and a correlation of scattered data which should prove of value to both the technologists of the field and to practical men whose work requires some knowledge of the chemistry and technology of plastics.

The book has 15 chapters in all, as follows: (1) *History of Plastics;* (2) *Raw Materials;* (3) *Theoretical Principles of Polymerization;* (4) *Chemistry of Plastic Materials;* (5) *Manufacture of Plastic Materials;* (6) *Synthetic Elastomers or Rubber-Like Plastics;* (7) *Physical Properties of Thermoplastic Materials;* (8) *Physical Properties of Thermosetting Materials;* (9) *Synthetic Resins;* (10) *Synthetic Fibres and Textiles;* (11) *Adhesives, Plywood and Impregnated Wood;* (12) *Manufacture of Dies and Molds;* (13) *Manufacture of Plastic Articles;* (14) *Chemical, Physical and Electrical Testing of Plastics;* (15) *Chemical Analysis of Raw Materials.* In addition, some valuable addenda is furnished and a subject index included.

The chapter on Synthetic Elastomers or Rubber-Like Plastics is well handled. It includes reference to the chemistry of natural rubber, a classification of polymers with rubber-like properties, a discussion of raw materials (coal, petroleum, acrylonitrile, ethylene dichloride, isoprene, styrene, vinyl acetylene, etc.), a description of the vulcanization theory, flexibility of elastomers at low temperatures, and, finally, an outline of the specific properties of the various copolymers.

Referring to the postwar status of rubber, the author states that "it is fairly evident that since a large mass of people in the Far East depend on rubber for their livelihood, and since natural rubber possesses certain advantages over the synthetic substitutes, rubber will regain a position in the new postwar economy of the world." On the other hand, however, he refers to the fact that the vast new (synthetic rubber) industry cannot be allowed to die out, and adds "it is probable that some equitable distribution between natural rubber and the new elastomers will be achieved."

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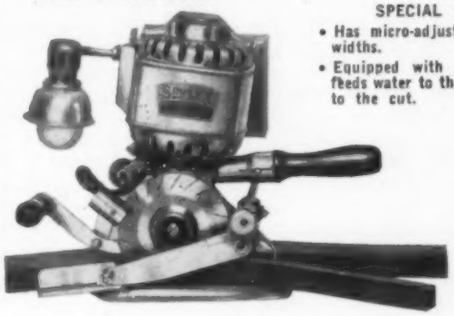

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BOOKLETS, CATALOGS, Etc.

Motor Truck Facts: 1944. Automobile Manufacturers Association. Transportation Bldg., Washington 6, D. C. 5¾ x 8½ in. 56 pp.

The sixth edition of this biennial publication presents factual data, statistically tabulated, on the motor truck industry. The extent to which warfare has been motorized is indicated by the revelation that 226 different types of military vehicles are being manufactured at the rate of $2,500,000,000 worth a year, or two and one-half times the total value of such manufacturing in 1941, the peak peacetime year. Civilian truck use in 1944 is shown to have been only slightly below its all-time peak. A series of maps, indicating how motor truck transportation is still restricted by conflicting state regulations, is included in the booklet, along with a summary of the recommendations for basic standards for trucks and highways which the National Interregional Highway Committee prepared for the government as a means for ending this interstate conflict. An index is provided for convenience.

•

Channel Black-Witcarb Mixtures in GR-S. (Report 44-4). Witco Chemical Co., 6200 W. 51st St., Chicago 38, Ill. 8½ x 11 in. 20 pp.

The range of properties attainable by various blends of channel black and Witcarb, the precipitated calcium carbonate, in GR-S is shown in this technical report. The results indicate that proper mixtures of these materials used alternatively in GR-S to replace SRF or thermatomic blacks can impart properties often superior to those containing these blacks alone. These properties include combinations of higher elongation and lower modulus, with constant loadings at any given tensile strength.

•

Plasticizers. Carbide & Carbon Chemicals Corp., 30 East 42nd St., New York 17, N. Y. 8½ x 11 in. 16 pp.

Essential information on various plasticizers, including the Flexol plasticizers, is given in this booklet. Names, formulas, physical properties and specifications, charts showing compatibilities with commercial resins, and data on performance are included. A discussion of the nature of plasticization and a summary of the requirements for effective plasticizers are also included, as is a section concerning the proper choice of a plasticizer for use with various synthetic resins and synthetic rubbers.

(FOR FURTHER DETAILS, SEE AD ON PAGE 582)

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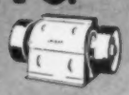

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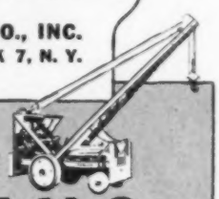

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REVIEWS (CONT'D)

Automobile Facts and Figures: 1944-45. Automobile Manufacturers Association, New Center Bldg., Detroit 2 Michigan. 6 x 8½ in. 64 pp.

The twenty-sixth edition of the A.M.A.'s yearbook, the first since 1943, brings up to date statistical information on how the automotive industry is meeting the undiminished battlefield demands for the weapons it produces and summarizes factual information on the role played by automotive transportation in the war effort. Approximately $24,000,000,000 worth of aircraft, guns, ammunition, tanks, military vehicles, and other war products, it is shown, have been turned out by the industry's 1,000 plants at a rate double that of the peak peacetime year. Of special interest is a list of war products manufactured by the industry. The booklet is provided with a detailed index.

•

Buna N Synthetic Rubbers. (Booklet No. 10). R. T. Vanderbilt Co., 230 Park Ave., New York 17, N. Y. 8½ x 11¼ in. 16 pp.

The effect of various compounding ingredients in representative types of Buna N is shown in this technical report. Seven types of Buna N, including Butaprene NXM and NL, Chemigum N1 and N2, Hycar OR-15 and OR-25, and Perbunan 26, were tested, and the effect of five classes of compounding materials (accelerators, vulcanizing agents, heat-aging resistants, carbon blacks and mineral fillers) was determined. Four types of curing combinations were employed. Complete results are shown in table and graph form.

•

United Rolls and Pinions. United Engineering & Foundry Co., Pittsburgh, Penna. 9½ x 11½ in. 66 pp. (Looseleaf).

This combination price schedule and hand book illustrates and describes the various types of rolls that are most successfully used in industry. It contains a list of the types and grades of rolls made by United Engineering, with the necessary data, designations and prices. A few representative rolls or passes for each type are illustrated in order to make selection of the proper roll an easy matter. Miscellaneous tables and charts, including a metric conversion chart, an open square chart, a hardness conversion table, and a table showing split gauges in decimal sizes, are also included.

•

Cotton Insulation. National Cotton Council of America, Memphis, Tenn. 5 x 8 in. 36 pp.

Some of the properties of cotton insulation, first made available commercially in 1940, are described in this booklet. The description is divided into 11 parts, covering such subjects as insulating value of cotton, weight of cotton insulation, resiliency, cohesiveness, flame resistance, repellence to mildew and household pests, and methods of handling and installation.

•

Resins and Plastics for Geon-Hycar Blends. (Tech. Bull. PM4). Chemical Division, B. F. Goodrich Co., Rose Building, Cleveland 15, Ohio. 8½ x 11 in. 8 pp.

This bulletin lists the advantages, as well as the limitations, of available blends of the Geon resins with Hycar OR-15 and OR-25. It cites the uses for which these blends possess unusual advantages and discusses compounding techniques as well as the mixing operations. Data on the curing and physical properties of typical formulations, including hose tube, friction stock and pure gum compounds, is given.

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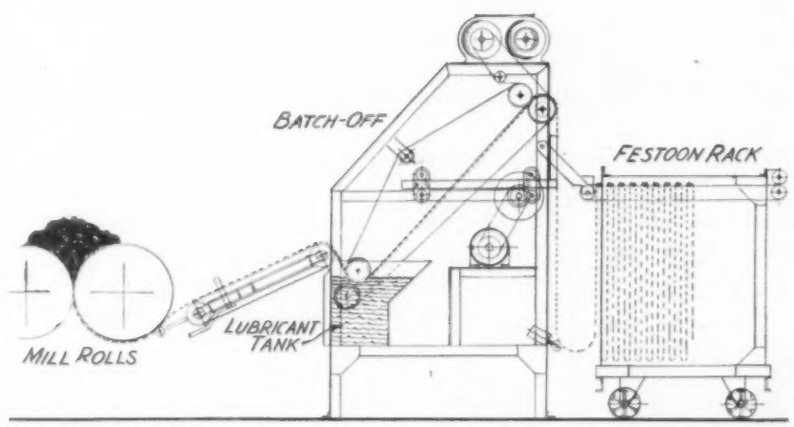

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MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK, MARCH 14, 1945

Crude Rubber

SOME interesting figures on imports, consumption and inventories of crude rubber from 1938 to 1944 were contained in a report on the over-all rubber situation released by the Rubber Reserve Co. in recent weeks. Imports into the United States in 1938 totaled 406,000 long tons, reached a high of 1,023,000 tons in 1941, and dropped to 34,000 tons in 1943. Due to increased efforts of procurement, Lend-Lease arrangements with Great Britain, and other factors, they climbed to 98,000 tons in 1944.

The consumption figures follow a somewhat similar course. Consumption in the United States amounted to 437,000 tons of crude rubber in 1938, climbed to 775,000 tons in 1941 (the year in which imports reached the all-time high of 1,023,000 tons), and dropped steadily in 1942, 1943 and 1944, the figures being 376,000, 317,000 and 144,000 tons, respectively. Year-end stocks, comparatively, amounted to 231,000 tons at the end of 1938, 533,000 tons at the end of 1941, and touched an all-time low of 93,000 tons at the end of last year. A minimum of 100,000 tons of crude rubber is considered the danger point for inventory.

The mushrooming of synthetic rubber production was emphasized in the report, climbing from 24,000 tons in 1942 to 763,000 tons in 1944. Because of dwindling supplies of natural rubber, it is estimated that production of synthetic rubber in 1945 will have to be increased to 1,000,000 tons, or 31% over 1944, and to 1,200,000 tons in 1946, or 58% over 1944.

Prices shown below are ceilings set by the Rubber Reserve Company:

	C	N-C
Plantations—		
Ribbed Smoked Sheets, 1X	22½	40
Thick Pale Latex Crepe, 1X	22½	40
Thin Pale Latex Crepe, 1X	22½	40
Thick Brown Crepe, 1X	21⅜	38⅞
Thin Brown Crepe, 1X	21⅜	38⅞
Thick Remilled Blankets, #1	21⅜	38⅞
Rolled Brown or Flat Bark	18	35½
Smoked Blankets, #1	21¼	38⅝
Claro Brand 1XRSS	22½	40
Sole Crepe Trimmings	22	39½
Sole Crepe	22½	40
Wild—		
Uncut Fines, Crude	15	29
Cut Fines, Crude	15½	29¾
Cut Fines, Washed & Dried	22½	40
Upriver Coarse, Crude	12⅝	26¾
Upriver Coarse, Washed & Dried	20¼	37¼
Caucho Ball, Crude	11⅜	24¾
Caucho Ball, Washed & Dried	19½	37
Guayule—		
Carload Lots	17½	31
Less than Carload Lots	18	31½
Balata—		
Surinam Sheet	42½	42½
Manaos Block	38¾	38¾
Colombian Block	38¾	38¾
Peruvian Prime	38⅝	38¾
Chicken Wire	23¾	23¾
Latex—		
Normal, Tank Car Lots	26	43½
Creamed, Tank Car Lots	26¾	44¼
Centrifuged, Tank Car Lots	27¾	45¼
Heat-Concentrated, Carload Drums	29½	47

C for Civilian Use; N-C for Non-Civilian Use.

Scrap Rubber

The stronger tone experienced in scrap rubber circles in recent months continues and in view of the anticipated jump in production of reclaimed rubber by request of the War Production Board it is expected to strengthen still further shortly. Supplies, fortunately, are still in good shape and scrap rubber dealers believe they can help the reclaimers step up to and maintain production of approximately 25,000 tons a month. The demand is still largely for tire and tube stocks, but increasing interest is being evidenced in auto tire peelings, the price for which is now upward following a long downward trend. Dealers have been bidding $34.00 Akron for No. 1 peelings, against $32.00 a month or two ago. Reclaimers are still shy of mixed synthetic scrap and such lots bring few offers. Some interest, however, is evident in Vinyl cable scrap. Prices shown below are ceilings on typical grades of scrap:

(Prices to Consumers, Delivered Akron)

Mixed passenger tires	ton	$20.00
Beadless truck tires	ton	26.00
Mixed truck tires	ton	20.00
Beadless passenger tires	ton	26.00
No. 1 passenger peelings	ton	52.25
No. 1 truck peelings	ton	52.25
No. 2 passenger tubes	lb.	.07¾
Red passenger tubes	lb.	.07½
Black passenger tubes	lb.	.06¾
Mixed passenger tubes	lb.	.06½
No. 2 truck tubes	lb.	.07½
Red truck tubes	lb.	.07¼
Black truck tubes	lb.	.06½
Buffings	ton	35.00
Bicycle tires	ton	15.00
Air bags and water bags	ton	15.00
Boots and shoes	ton	33.00

Tire Fabrics

The situation in the tire fabric field remains unchanged, with practically no demand for such fabrics. Consequently, prices are nominal and in many quarters are not even being quoted. The prices shown below are those which were in force on or about January 15, 1942.

(Prices Net at the Mill)

Peeler, carded, 23/5/3	lb.	.43½ @	.44
Peeler, carded, 23/4/3	lb.	.44½ @	.45
Peeler, carded, 15/3/3	lb.	.41½ @	.42
Peeler, carded, 15/4/2	lb.	.41½ @	.42
Peeler, carded, 13/3/3	lb.	.40½ @	.41
CHAFERS			
Carded, American, 1 1/16"	lb.	.43½ @	.44
Carded, American, 1"	lb.	.39¼ @	.48

Sheetings

48x40	36	in.	5.50	lb.	—	@ 8.272
40x40	36	in.	6.15	lb.	—	@ 7.398
40x36	36	in.	6.50	lb.	—	@ 7.000
48x48	40	in.	2.50	lb.	—	@17.200
48x48	40	in.	2.85	lb.	—	@15.087
56x60	40	in.	3.60	lb.	—	@12.638
48x44	40	in.	3.75	lb.	—	@11.733

Note: Prices shown above are ceiling prices set by order of the O.P.A.

Cotton

The price of middling uplands on the Cotton Exchange has swung in the very narrow range of 24 points since our last report, high for the period being 22.54 on March 6 and low 22.30 on February 13. The average price for middling uplands on the Exchange for the month of February was 22.28, based on 22 trading days. At no point in the period did the price fluctuate sharply up or down, although the usual day-to-day fluctuation of 3 to 5 points was evidenced. The usual amount of trade purchasing, offset by commission house selling and liquidation, was also in evidence. The market has its eyes glued on war developments and is almost at a status quo awaiting the results of the big push now on in Europe. Considerable interest is being expressed in the stand expected to be taken by United States representatives for an international commodity agreement on cotton at the meeting of cotton-producing nations scheduled to convene in Washington on March 26. Recognizing the fact that world cotton stocks for export will probably be anywhere from 2 to 4 times likely export requirements, the American delegates to the conference are believed prepared to support multilateral action to relieve the problem of post-war surpluses. Quotations for middling uplands on the Exchange follow:

	Feb. 10	March 14		
	Close	High	Low	Close
July	21.27	21.89	21.84	21.88
October	20.58	21.28	21.24	21.27
December	....	21.18	21.15	21.18

Reclaimed Rubber

As a result of the severe carbon black shortage and the resultant orders curtailing such consumption, the demand for reclaim is reaching still higher levels than those witnessed in recent months. Reclaim is expected to take up part of the slack, along with increased use of zinc oxide, mineral rubber, clays, and other reinforcing agents. In anticipation of the mounting demand for reclaim, WPB has asked reclaimers to step up production from the approximate 19,000 tons a month to 25,000 tons. Since stepping up reclaim production is basically a manpower problem, special consideration is being granted in this regard by the War Manpower Commission. Control over consumption of reclaim has also been tightened by an amendment to Rubber Order R-1. Prices shown below are ceilings on typical grades of reclaim:

Shoe				
Unwashed	lb.	.07½ @	.07¾	
Tube				
Black Tube	lb.	.11¾ @	.12	
Red Tube	lb.	.12½ @	.12¾	
Tires				
Black (acid process)	lb.	.08	@	.08¼
Black, selected tires	lb.	.07	@	.07¼
Truck, Heavy Gravity	lb.	.09	@	.09¼
Miscellaneous				
Mechanical blends	lb.	.05	@	.06
White	lb.	.13½ @	.13¾	

Ducks

Enameling (single filling)	lb.	— @	.44¼
Belting and Hose	lb.	— @	.39
Single filling, A grade	lb.	— @	.19¾
Double filling, A grade	lb.	— @	.20¾

PERSONAL

TRANSPORTATION . . .

1883 STYLE

GRANDFATHER'S high wheeler—*with solid rubber tires*—was the last word in personal transportation in 1883. Replacing iron rims, the new comfort and safety of rubber tires pointed the way to the growing "Age of Rubber" in which Reclaim has played one of the most essential parts.

U. S. Rubber Reclaiming, a going concern in 1883, is proud of its many "firsts" in the industry . . . especially its establishment, in 1905, of the first scientific laboratory exclusively devoted to research and rigid control of Reclaimed rubber. Out of it have come standardized BUFFALO grades on which hundreds of manufacturers rely for quality and uniformity in their own products.

BUFFALO — which means U. S. Rubber Reclaiming — offers its highly specialized knowledge of Reclaim and its many uses to forward-looking manufacturers. To them, BUFFALO Reclaims present the opportunity for great new strides in design and production of countless post war industrial and consumer articles.

U. S. RUBBER RECLAIMING CO., INC., 500 Fifth Ave., New York 18

PLANTS AT BUFFALO, N. Y.

AKRON
Dugan & Campbell
907 Akron Savings & Loan Bldg.

TRENTON
H. M. Royal, Inc.
689 Pennington Ave.

TORONTO
H. Van Der Linde, Ltd.
156 Yonge St.

63 Years Serving The Industry Solely As Reclaimers

CHEMICAL MARKETS

New York, Mar. 14, 1945
All Prices F.O.B. Works

ACCELERATORS

Organic

A-1 (Thiocarbanilid)	lb.	.28	.33
A-10	lb.	.36	.42
A-19	lb.	.52	.58
A-32	lb.	.60	.70
A-77	lb.	.42	.55
A-100	lb.	.42	.55
Aldehyde ammonia, crystals	lb.	.65	.70
Altax	lb.	.39	.41
Beutene	lb.	.59	.64
B-J-F	lb.	.34	.39
Butasan	lb.	—	1.10
Butyl Zimate	lb.	—	1.10
Captax	lb.	.34	.36
Crylene	lb.	.40	.47
Di-Ortho-Tolyguanidine	lb.	.44	.46
Diphenylguanidine	lb.	.35	.41
El-Sixty	lb.	.36	.43
Ethasan	lb.	—	1.10
Ethyl Tuads	lb.	—	1.25
Ethyl Zimate	lb.	—	1.10
Ethylidine aniline	lb.	.42	.43
Formaldehyde aniline	lb.	.31	—
Guantal	lb.	.39	.48
Hepteen	lb.	.34	.39
Hexamethylenetetramine	lb.	.33	—
Lead Oleate, No. 999	lb.	.13	—
Witco	lb.	.15	—
Ledate	lb.	—	1.20
Methasan	lb.	—	1.20
Methyl Tuads	lb.	—	1.25
Methyl Zimate	lb.	—	1.20
Monex	lb.	—	1.25
Pentex	lb.	.74	.84
Phenex	lb.	.49	.54
Pip-Pip	lb.	—	1.63
R & H 50-D	lb.	.42	.43
R-2 Crystals	lb.	—	1.55
Rotax	lb.	.44	.46
Safex	lb.	1.15	1.25
Santocure	lb.	.60	.67
Selenac	lb.	—	1.60
SPDX-G	lb.	.53	.58
Super-Sulfur No. 2	lb.	.13	.15
Thiocarbanilid, drums	lb.	.28	.33
Thiofide	lb.	.39	.46
Thiotax	lb.	.34	.41
Thiurad	lb.	—	1.25
Trimene	lb.	.54	.64
base	lb.	1.03	1.18
Triphenylguanidine	lb.	.45	—
Ulto	lb.	.99	1.04
Ureka	lb.	.50	.57
Blend B	lb.	.50	.57
Blend C	lb.	.48	.55
Vulcanex	lb.	.42	.43
Vulcanol	lb.	.85	—

Inorganic

Litharge, domestic	lb.	.07	.07½
Magnesia, calcined, heavy	lb.	.04	—

COLORS

Blues [b]			
Prussian	lb.	.36	—
Ultramarine	lb.	.17	.27
Browns [b]			
Mapico	lb.	.1135	—
Umber, Turkey	lb.	.04¼	—
Greens [b]			
Chrome	lb.	—	.25
Guignet's Green	lb.	.70	—
Reds			
Antimony crimson, 15/17	lb.	—	—
Indian	lb.	.08¼	—
Domestic (Maroon)	lb.	.11	—
Mapico	lb.	.096	—
Red oxide, pure	lb.	.10	.12
Rub-Er-Red	lb.	.09¼	—
Whites [b]			
Cryptone No. 19	lb.	.0560	.0585
Cryptone CB No. 21	lb.	.0560	.0585
Cryptone ZS-800	lb.	.0825	.0850
Lithopone:			
Albalith	lb.	.04¼	.04½
Astrolith	lb.	.04½	.04¾
Azolith	lb.	.04¼	.04½
Ray-cal	lb.	.05½	.05¾
Rayox	lb.	.14½	.15¼
Titanox A	lb.	.14½	.14¾
Titanox B	lb.	.05¾	.06
Titanox C	lb.	.05½	.05¾
Zinc Oxide—American Process [b]			
American Azo: ZZZ (lead free)	lb.	.07½	.07½
Anaconda, lead free	lb.	.07¼	.07½
Horsehead Lead Free Brand:			
Special—3	lb.	.07¼	.07½
XX Red—4	lb.	.07¼	.07½
XX Red—72	lb.	.07¼	.07½
XX Red—103	lb.	.07¼	.07½
Kadox, black label—15	lb.	.07¼	.07½
Red label—17	lb.	.07¼	.07½
St. Joe, black label	lb.	.07¼	.07½
green label	lb.	.07¼	.07½
red label	lb.	.07¼	.07½
U. S. P.—7, bbls.	lb.	.10½	.10¾

[a] Price Ceilings.
[b] Price Suggestions or Agreements.

Zinc Oxide—French Process: [b]			
Florence White Seal—7 bbl.	lb.	.09½	.09¾
Green seal—8	lb.	.09	.09¼
Red seal—9	lb.	.08½	.08¾
Yellows [b]			
Cadmolith	lb.	.55	.60
Chrome	lb.	—	.50
Mapico	lb.	.071	—

BLACKS

(In bags, carload lots)

Arrow Compact	.0355	—
Atlantic	.0355	—
Certified	.0355	—
Certified Spheron	.0355	—
Continental	.0355	—
Disperso	.0355	—
Dixiedensed	.0355	—
Dixiedensed 66	.0355	—
Excello	.0355	—
Furnex	.03½	.06
Furnex Beads	.03½	.06
Gastex	.03½	.08
Kosmobile	.0355	—
Kosmobile 66	.0355	—
Kosmos-Dixie 20	.03½	.06
Micronex (Amarillo)	.0355	—
Micronex Beads (Amarillo)	.0355	—
Pelletex	.03½	.06
P-33	.04	.06½
Philblack A	.05	—
Shell Carbon (Del. Midwest)	.0240	—
Sterling	.035	—
Supreme	.0355	—
Thermax	.0225	.05
Wyex	.0355	—

COMPOUNDING MATERIALS

Aluminum Flake	ton	18.00	24.50
99½%-300	ton	—	16.50
86-90%-300	ton	—	13.50
Asbestine	ton	16.50	20.00
Atomite	ton	—	27.50
Barium carbonate (98-100%)	ton	47.00	49.00
Barytes	ton	25.35	36.00
Bentonite	ton	11.00	16.00
Blanc fixe, dry	ton	60.00	67.50
Calcene	ton	37.50	43.00
Catalpo (fact)	lb.	.02	—
Clay, Aerfloted, Suprex	ton	11.00	23.50
Aerfloted Paragon	ton	10.00	22.50
Champion	ton	—	11.00
Crown	ton	—	11.00
Dixie	ton	11.00	23.50
Kaolloid	ton	—	9.00
Langford	ton	—	8.50
Magnolia	ton	—	10.00
McNamee	ton	10.00	22.50
Par	ton	—	11.00
Witco	ton	10.00	—
Kalite No. 1	ton	26.00	52.00
Kalvan	ton	100.00	126.00
Keystone white	ton	—	14.00
Magnesium carbonate	lb.	.06¼	—
Mineralite	ton	—	30.00
Pyrax A	ton	—	7.90
Rottenstone (powd. Dom.)	ton	25.50	37.50
Rubberol	lb.	—	.17½
Silene EF (calcium silicate)	lb.	.055	.06
Silical	ton	65.00	85.00
Snowflake white	ton	—	16.00
Tale, domestic	ton	17.00	25.00
Whiting, commercial	ton	16.00	26.00
Witco	ton	—	6.50
Witcarb R	ton	—	100.00
Witcarb R-12	ton	—	40.00
Wood Flour (100 mesh)	ton	30.00	32.00

MINERAL RUBBER

285°-300° Mineral Rubber	ton	25.00	27.00
Black Diamond	ton	25.00	—
Dielex	lb.	—	.06
Hard Hydrocarbon	ton	25.00	27.00
MilliMar	lb.	—	.05½

MISCELLANEOUS

Aromatics—Rodo #0	lb.	4.00	4.50
Rodo #10	lb.	5.00	5.50
Curodex 19	lb.	2.75	—
Curodex 188	lb.	3.50	—
Curodex 198	lb.	4.50	—
Para-Dors	lb.	4.50	—
Areaklene No. 375	lb.	.35	.50
Darvan (dispersing agent)	lb.	.30	.39
Santomerse S	lb.	.11	.25
Sponge Paste	lb.	—	.18
Sunproof	lb.	.22¼	.27¼
Tonox	lb.	.50	.59
Ty-Ply	gal.	6.75	8.75
Unicel (blowing agent)	lb.	.50	—

SOFTENERS

Acids			
Acetic, 28%, bbls.	100 lb.	3.38	3.63
Nitric, 36 degrees	cwt.	5.00	—
Acids, Fatty			
Laurex	lb.	.14¾	.17¼
SL-20	lb.	.11	.13
Stearex Beads	lb.	.10	.11
Stearite	lb.	.10	—

Alkalies			
Caustic Soda, 76%	cwt.	2.70	5.70
Soda Ash, 58%	cwt.	1.15	2.98
Oils			
Degras, bbls.	lb.	.10	.12
Para-Flux	gal.	.17	.18
Para-Lube	lb.	.046	.048
Petrolatum, amber [b]	lb.	.03¾	—
Pigmentaroil, tank cars	gal.	.20½	—
in drums	gal.	.26½	.27½
Pine, tanks	gal.	.55	—
Rosin Oil, cmpd.	gal.	.40	—
Rubberol	lb.	.13½	.14
Rubtack	lb.	.10	—
Seedine, c.l.	lb.	.07¼	—
Witco Palm Oil	lb.	—	—
Witco Softener No. 20	gal.	.20	—
Woburn No. 8, c.l.	lb.	.06	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06	—
coal tar	ton	19.00	22.00
hardwood	ton	16.00	22.50
pine, 200 lb. gr. wt.	bbl.	—	4.50
Pigmentar, tank cars	gal.	.20½	—
in drums	gal.	.26½	.27½
Retort Pine Tar, drums	gal.	.26½	.27½
Solvents			
Acetone, pure [a]	lb.	.07	—
Benzene, 90%, tank car	gal.	.14	—
Beta-Trichlorethane	gal.	—	.20
Bondogen	lb.	.98	1.25
Carbon, bisulfide	lb.	.05	.08½
Carbon tetrachloride	gal.	.83	1.27
Dichlorethylene	lb.	—	—
Dipentene, cml., drums	gal.	.48	.50
Ethylene dichloride	lb.	.07½	.08¼
Plastogen	lb.	.07¾	.12
Reogen (drums)	lb.	.11½	.15
Rub-Sol	gal.	.09½	—
Trichlorethylene	lb.	.08	.09¼
Turpentine, spirits	lb.	.78½	—
dest. dist., drums	gal.	.50	.55
Waxes			
Antisol	lb.	.22½	.23½
Beeswax, white [b]	lb.	.58	—
Carnauba, yellow [b]	lb.	.83¼	—
Ceresin, white, dom.	lb.	.13½	.15
Montan, crude	lb.	—	—
Paraffin [a] Yellow crude scale, 124/126	lb.	.04¼	—
Refined, 123/125	lb.	.05¼	—

ANTI-OXIDANTS

Agerite Alba	lb.	1.95	2.05
Gel	lb.	.52	.54
Hipar	lb.	.61	.63
Powder	lb.	.40	.42
Resin	lb.	.43	.45
Resin D	lb.	.40	.42
White	lb.	1.23	1.33
Albasan	lb.	.69	.74
Antox	lb.	.54	.56
B-L-E	lb.	.40	.49
Flectol H	lb.	.40	.47
Neozone A, C, D, E	lb.	.40	.63
Oxynone	lb.	.77	.90
Retardex	lb.	.44½	.47½
Santoflex B	lb.	.40	.47
Santoflex BX	lb.	.54	.61
Santovar O	lb.	1.15	1.40
S.C.R.	lb.	.32	.34
Stabilite	lb.	.48	.50
Stabilite Alba	lb.	.69	.74
VGB	lb.	.43	.52

EXTENDERS

Naftolen R-100	lb.	.10	.12

LUBRICANTS—MOLD & RUBBER SURFACE

Areaklene	lb.	.35	.50
Cocoa Soapstock	lb.	.06	.08
Colite	gal.	.90	1.15
Dipex	lb.	.06	.08
Glycerized Liquid Lubricant	gal.	—	1.35
Lubrex	lb.	.25	.30
Mineralite	ton	—	30.00
Sericite	ton	65.00	75.00
Soap Tree Bark, cut, sifted	lb.	.06	.08

FACTICE OR RUBBER SUBSTITUTES

Amberex	lb.	.25	—
Amberex Type B	lb.	.18¾	—
Black	lb.	.08½	.13
White	lb.	.09	.15
Brown	lb.	.10	.14
Neophax A	lb.	.16½	—

VULCANIZING INGREDIENTS

Dispersed Sulfur No. 3	lb.	.08	.12
Sulfur Chloride, yellow (drs.)	lb.	.03	.08
Sulfur, rubber makers			
Refined (bags)	cwt.	2.55	—
Commercial (bags)	cwt.	2.20	—
Telloy	lb.	1.75	—
Vandex	lb.	1.75	—
Vultac No. 1	lb.	.38	.43
Vultac No. 2	lb.	.38	.45
Vultac No. 3	lb.	.42	.49

The WHERE-TO-BUY Section of THE RUBBER AGE in which are listed the Products and Services of the Leading Suppliers to the Industry.

The Market Place

If what you are seeking is not listed here, write to the Service Department of THE RUBBER AGE, 250 West 57th St., New York 19, N. Y.

Chemicals and Compounding Materials

ACCELERATORS—
El-Sixty; Ureka; Ureka C; Guantal; Santocure; DPG; Pip Pip; A-10; A-32; A-100; R-2 Crystals • ANTIOXIDANTS—Flectol H; Santoflex B, BX; Santovar O.
MONSANTO CHEMICAL CO.
Rubber Service Dept.
1012 Second National Bldg., Akron 8, Ohio

CARBON BLACK
"Atlantic" Carbon Blacks meet the exacting standards of modern rubber production.
Chas. Eneu Johnson & Co., Mfrs.
Distributed by
C. P. HALL CO.
Akron — Boston — Los Angeles — Chicago

CHEMICALS
For Natural & Synthetic Rubber
"PICCO" Brand—Plasticizers; Coumarone Resins; Reclaiming Oils, Coal Tar Naphthas.
Pennsylvania Industrial Chem. Corp.
Clairton Penna.

AERO BRAND
RUBBER CHEMICALS
DPG—DOTG—Accelerator 49
Rubber Sulphur
American Cyanamid & Chemical Corporation
30 Rockefeller Plaza, New York 20, N. Y.

CARBON BLACK
DIXIE...KOSMOS
Used throughout the world
UNITED CARBON COMPANY
Charleston, W. Va.
New York • Akron • Chicago

CHEMICALS
A complete line of plasticizers, resins, substitutes, fillers, etc., for Synthetic, Natural and Reclaimed Rubber.
STANDARD CHEMICAL COMPANY
Akron 8, Ohio

ALUMINUM FLAKE
A uniform, fine, low gravity, white reinforcing pigment. *Furnished to the rubber trade for 42 years.*
The Aluminum Flake Co.
Akron, Ohio

CARBON BLACK
CONTINEX SRF—A New Semi-Reinforcing Furnace Black. *Now in Full Scale Production.*
Continental Carbon Co., *Mnfr.*
Witco Chemical Co., *Distributor*
295 Madison Avenue
New York 17, N. Y.

CHEMICALS AND MINERAL
Ingredients—Whiting, Clay, Tale, Barytes, Colors. Heavy Calcined Magnesia. Carbonate of Magnesia, Pumice Stone.
Standard Since 1890
Whittaker, Clark & Daniels, Inc.
260 West Broadway New York 13, N. Y.

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.
Rare Metal Products Co.
Belleville, N. J.
Direct Factory Representation

CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.
Moore & Munger
33 Rector Street New York 6, N. Y.

CHEMICALS
PIGMENTS
ASPHALTUMS
Witco Chemical Company
295 Madison Avenue
New York 17, N. Y.

CALCENE—SILENE EF
Two exclusive Columbia pigments proving exceptionally valuable to Rubber Compounders. Send for free data sheets.
PITTSBURGH PLATE GLASS CO.
COLUMBIA CHEMICAL DIV.
Grant Bldg., Pittsburgh (19), Pa.

CHEMICALS
Carbon Black—Clay—Colors
Accelerators—Sulphur
Stocks Carried At All Times
Ernest Jacoby & Co.
79 Milk St. Boston, Mass.
Cable Address: Jacobite Boston

CLAY
*CHAMPION
*MAGNOLIA
National Kaolin Company
Distributed by
C. P. HALL CO.
Akron — Los Angeles — Chicago

CARBON BLACK-MICRONEX
The world's standard gas black; universally known as the "King of Rubber Pigments."
BINNEY & SMITH CO.
41 East 42nd St. New York 17, N.Y.

CHEMICALS
From Coal Tar Bases—For Use As Antiseptics, Plasticizers, Reclaiming Oils, Softeners, Solvents, Tacifiers.
Koppers Company
Tar and Chemical Div.
Koppers Bldg. Pittsburgh, Pa.

COAL TAR CHEMICALS

Coumarone Resins	Tack Producers
Resinous Oils	Dispersing Oils
Reclaiming Oils	Softeners
Solvents	

The Neville Company
Neville Island, Pittsburgh, Penna.

CARBON BLACK—Aerfloted
WYEX — TX — HX
Compressed — Compact (Dustless)
J. M. Huber, Inc.
460 West 34th St., New York 1, N. Y.

CHEMICALS

For Rubber	For Industry Generally	
Accelerators	*Acids*	*Latex*
Antioxidants	*Oil of Myrbane*	*Lotol*
Specialties	*Aniline Oil*	*Dispersions*

NAUGATUCK CHEMICAL
Division of United States Rubber Co.
1230 SIXTH AVE. NEW YORK 20, N. Y.

COLLOIDAL SULPHUR
COLLOIDAL ZINC OXIDE
COLLOIDAL COLORS
HEVEATEX CORPORATION
78 Goodyear Ave. Melrose, Mass.
Offices in New York, Akron, Chicago

The Market Place

The WHERE-TO-BUY Section of THE RUBBER AGE in which are listed the Products and Services of the Leading Suppliers to the Rubber Industry. If what you are seeking is not listed here, write to the Service Department of THE RUBBER AGE, 250 West 57th St., New York 19, N. Y.

Chemicals and Compounding Materials {continued}

COLORS
BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST
For All Cures
MONSANTO CHEMICAL CO.
Rubber Service Dept.
1012 Second National Bldg., Akron, Ohio

GASTEX
Special Process Reinforcing BLACK. Superior aging and oil resistant properties. Low permanent set.
Herron Bros. & Meyer, Akron, Ohio
General Sales Agents for
General Atlas Carbon
Pampa, Texas

OROPLAST
Plasticizer—Sulphur Reactive
High Loading Tolerated
Great Elongation Produced
Cool Processing Stocks
Advance Solvents & Chem. Corp.
245 Fifth Ave., New York 16, N. Y.

COMPOUNDING Materials
Vulcanizing Agents — Pigments
Accelerators — Clays
Antioxidants — Mineral Rubber
Plasticizers — Aromatics
Dispersions — Blacks
R. T. VANDERBILT CO.
230 Park Ave. New York 17, N. Y.

IRON OXIDES
Asbestine—Barytes—Talc—Soapstone
C. K. Williams & Co.
EASTON, PA.

PARA-FLUX
The Universal Softener—Adaptable, Uniform. Improves Quality—Economical.
The C. P. Hall Co.
2510 First Central Tower
Akron Ohio

CUMAR —Paracoumarone Resin.
A neutral gum for synthetic rubber compounding. *Laboratory test data, samples and prices on request.*
THE BARRETT DIVISION
Allied Chemical & Dye Corp.
40 Rector St., New York 6, N. Y.

MAGNESIA
Calcined Magnesia—for neoprene
Carbonate of Magnesia—precipitated
The Philip Carey Mfg. Co.
Cincinnati Ohio

PELLETEX (The pellet *Gastex*)
The special process reinforcing black in free-flowing form. Saves power; none wasted; protects adjacent colored stocks.
Herron Bros. & Meyer, Akron, Ohio
General Sales Agents for
GENERAL ATLAS CARBON
Pampa, Texas

DU PONT Rubber Chemicals
DU PONT RUBBER COLORS
DU PONT ACCELERATORS
DU PONT ANTI-OXIDANTS
E. I. du Pont de Nemours & Co., Inc.
RUBBER CHEMICALS DIVISION
WILMINGTON, DELAWARE

MAGNESIUM OXIDE
Calcined Magnesium Oxide prepared for use in the compounding of neoprene. Full details on request.
J. T. Baker Chemical Co.
Phillipsburg New Jersey

PHILBLACK A
NEW HMF TYPE BLACK
Offers: Excellent Processing — Low Hysteresis, and High Abrasion.
Phillips Petroleum Company
Philblack Division
First Central Tower, Akron

DUTREX
SHELL DUTREX 6—Plasticizer and Extender for GR-S
Chemically and Physically Controlled
Shell Oil Company, Inc.
50 West 50th St., New York 20, N. Y.

MAGNESIUM OXIDE
Extra Light—Original neoprene type
Also Light, Medium and Heavy types
General Magnesite & Magnesia Co.,
2960 East Venango St., Phila. 34, Pa.

RUBBER PROCESSING OILS
For outstanding compatibility in processing natural or modern synthetic rubbers, use
SUN RUBBER PROCESSING OILS
Write
SUN OIL COMPANY
Philadelphia Pennsylvania

"FACTICE"—Prevents blooming, makes colors fast and a smoother batch.
(Reg. U. S. Pat. Off.)
Stamford Rubber Supply Co.
Stamford, Conn.

MICA
"CONCORD" Wet Ground Mica
Its *White, Pure* and *Uniform*
Send for Samples and Prices
CONCORD MICA CORP.
Penacook Station Concord, N. H.

RUBBER SUBSTITUTES
White, brown and black.
The Carter Bell Mfg. Co.
Springfield, New Jersey

FURNEX—FURNEX BEADS
The High Resilience Semi-Reinforcing Black
BINNEY & SMITH CO.
41 East 42nd St. New York 17, N. Y.

MOLD LUBRICANT
"Orvus" enables articles to leave molds readily; molds clean easily. Effective in hardest water. Also acts as thorough cleanser for molded and extruded rubber goods.
PROCTER & GAMBLE
Cincinnati Ohio

SOFTENERS
Rosin Oil — Pine Tar
Burgundy Pitch
"Galex" — a non-oxidizing Resin
National Rosin Oil & Size Co.
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The Market Place

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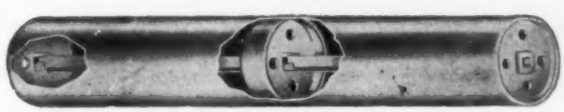

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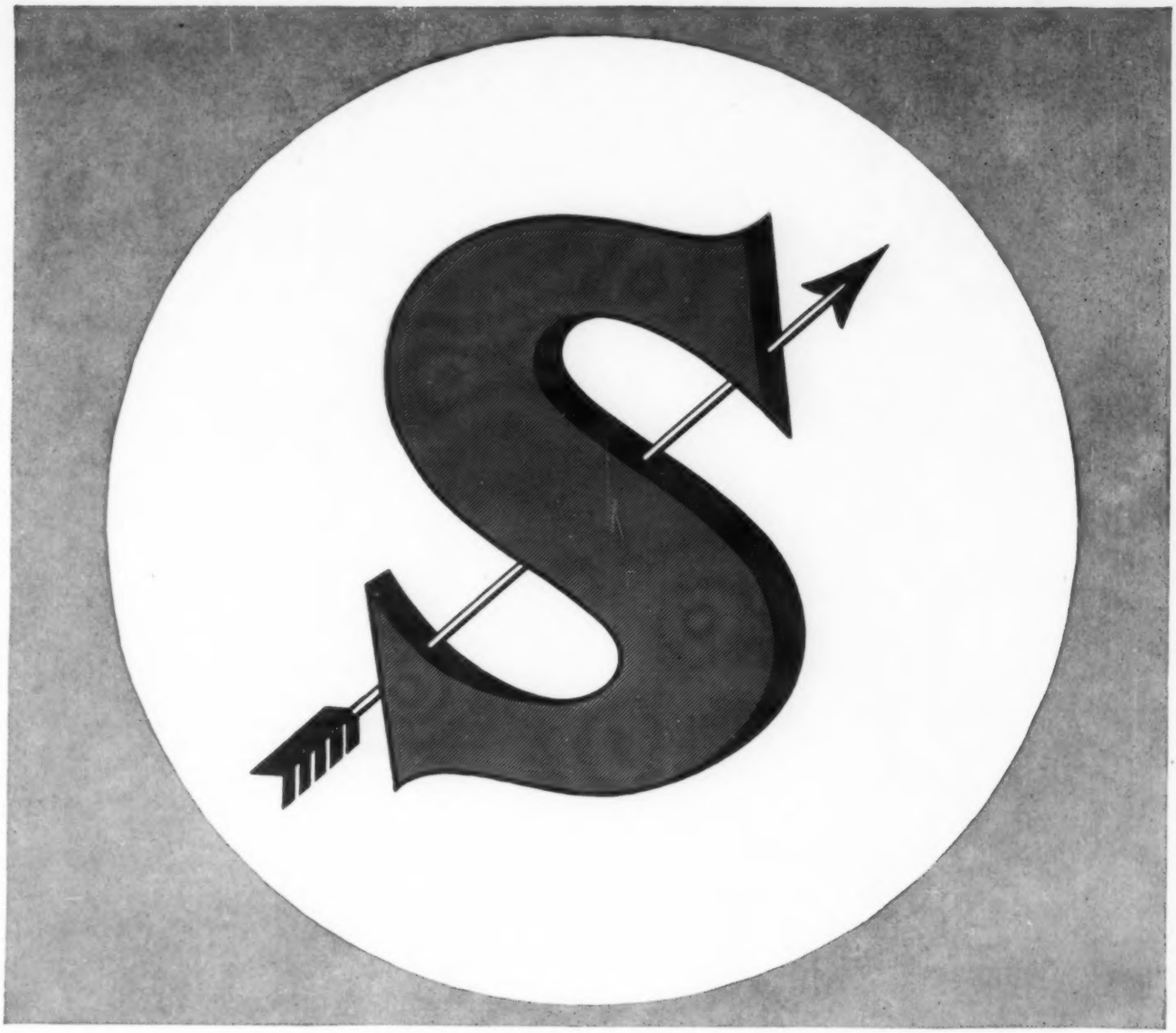

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